

ReglasAsociacion

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Transparencias

```
#Francisco Pérez Hernández
setwd("~/Dropbox/zMaster/zRStudio/Master-en-Ciencia-De-Datos-e-Ingeniería-de-Computadores/2 Minería de c
library(arules)

## Loading required package: Matrix
## Warning: package 'Matrix' was built under R version 3.3.2
##
## Attaching package: 'arules'
## The following objects are masked from 'package:base':
##
##      abbreviate, write

library(mlbench)
#Cargamos la BD en nuestra zona de trabajo
data(Zoo)
#Consultamos sus dimensiones
dim(Zoo)

## [1] 101 17

#Vemos las 2 primeras filas para ver los atributos y sus tipos
Zoo[1:2,]

##           hair feathers  eggs milk airborne aquatic predator toothed
## aardvark TRUE      FALSE FALSE TRUE      FALSE  FALSE      TRUE      TRUE
## antelope TRUE      FALSE FALSE TRUE      FALSE  FALSE      FALSE      TRUE
##           backbone breathes venomous  fins legs  tail domestic catsize
## aardvark      TRUE      TRUE      FALSE FALSE    4 FALSE      FALSE      TRUE
## antelope      TRUE      TRUE      FALSE FALSE    4  TRUE      FALSE      TRUE
##           type
## aardvark mammal
## antelope mammal

summary(Zoo)

##           hair           feathers           eggs           milk
## Mode :logical   Mode :logical   Mode :logical   Mode :logical
## FALSE:58        FALSE:81        FALSE:42        FALSE:60
## TRUE :43         TRUE :20         TRUE :59         TRUE :41
## NA's :0          NA's :0          NA's :0          NA's :0
##
##
##           airborne           aquatic           predator           toothed
## Mode :logical   Mode :logical   Mode :logical   Mode :logical
```

```
## FALSE:77      FALSE:65      FALSE:45      FALSE:40
## TRUE :24      TRUE :36      TRUE :56      TRUE :61
## NA's :0       NA's :0       NA's :0       NA's :0
##
##
##
## backbone      breathes      venomous      fins
## Mode :logical  Mode :logical  Mode :logical  Mode :logical
## FALSE:18      FALSE:21      FALSE:93      FALSE:84
## TRUE :83      TRUE :80      TRUE :8       TRUE :17
## NA's :0       NA's :0       NA's :0       NA's :0
##
##
##
## legs          tail          domestic      catsize
## Min. :0.000    Mode :logical  Mode :logical  Mode :logical
## 1st Qu.:2.000    FALSE:26      FALSE:88      FALSE:57
## Median :4.000    TRUE :75      TRUE :13      TRUE :44
## Mean :2.842     NA's :0       NA's :0       NA's :0
## 3rd Qu.:4.000
## Max. :8.000
##
##          type
## mammal    :41
## bird      :20
## reptile   : 5
## fish      :13
## amphibian : 4
## insect    : 8
## mollusc.et.al:10
```

```
#Vemos que variables tenemos, donde tenemos: pelo, plumas, huevos, leche, aereo, acuatico,
#depredador, dentado, vertebrado, respira, venenoso, aletas, piernas, cola, domestico,
#"catsize", clase(mamifero,pajaro,reptil,pez,amfibio,insecto,molusco)
summary(Zoo$legs)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      0.000  2.000   4.000   2.842  4.000   8.000
```

```
#Convertimos las variables booleanas a factor
Zoo[["hair"]] = as.factor(Zoo[["hair"]])
Zoo[["feathers"]] = as.factor(Zoo[["feathers"]])
Zoo[["eggs"]] = as.factor(Zoo[["eggs"]])
Zoo[["milk"]] = as.factor(Zoo[["milk"]])
Zoo[["airborne"]] = as.factor(Zoo[["airborne"]])
Zoo[["aquatic"]] = as.factor(Zoo[["aquatic"]])
Zoo[["predator"]] = as.factor(Zoo[["predator"]])
Zoo[["toothed"]] = as.factor(Zoo[["toothed"]])
Zoo[["backbone"]] = as.factor(Zoo[["backbone"]])
Zoo[["breathes"]] = as.factor(Zoo[["breathes"]])
Zoo[["venomous"]] = as.factor(Zoo[["venomous"]])
Zoo[["fins"]] = as.factor(Zoo[["fins"]])
Zoo[["tail"]] = as.factor(Zoo[["tail"]])
Zoo[["domestic"]] = as.factor(Zoo[["domestic"]])
Zoo[["catsize"]] = as.factor(Zoo[["catsize"]])
```

```

#De el único atributo continuo lo dividimos en intervalos
Zoo[["legs"]] = ordered( cut ( Zoo[["legs"]], c(-Inf,0,Inf) ) ,
                        labels = c ("no_legs", "has_legs"))
#Convertimos el data.frame en un conjunto de transacciones con la función as
ZooTrans <- as(Zoo,"transactions")
ZooTrans

## transactions in sparse format with
## 101 transactions (rows) and
## 39 items (columns)

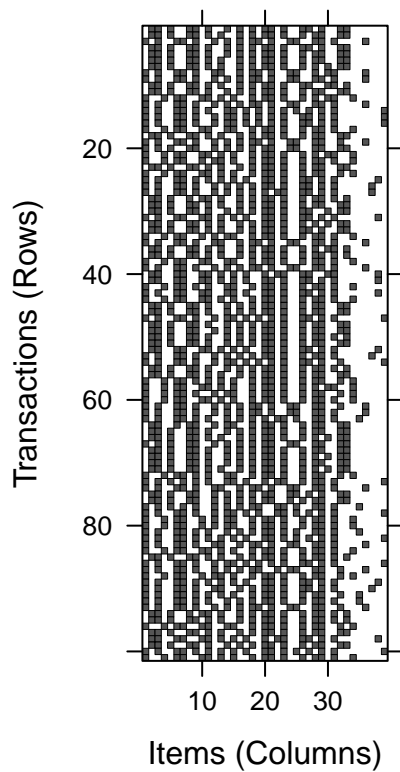
#Por lo que tenemos un conjunto de transacciones de 101 transacciones y 39 items

#Vemos el resumen de la BD de transacciones
summary(ZooTrans)

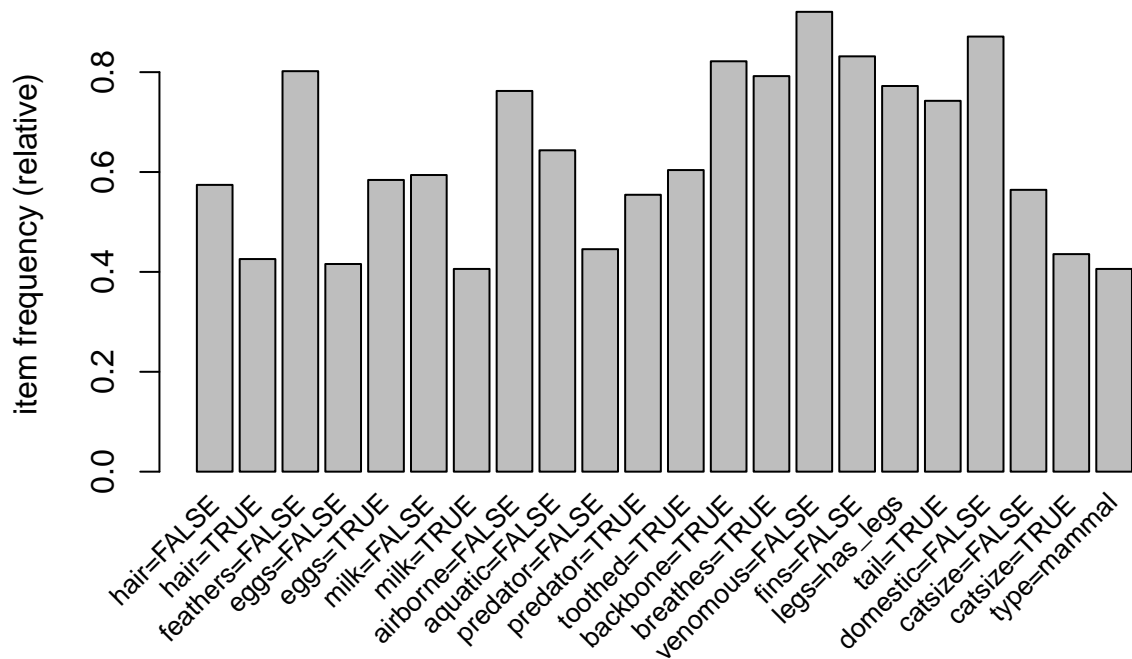
## transactions as itemMatrix in sparse format with
## 101 rows (elements/itemsets/transactions) and
## 39 columns (items) and a density of 0.4358974
##
## most frequent items:
## venomous=FALSE domestic=FALSE      fins=FALSE  backbone=TRUE feathers=FALSE
##           93             88             84             83             81
##      (Other)
##       1288
##
## element (itemset/transaction) length distribution:
## sizes
## 17
## 101
##
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      17      17      17      17      17      17
##
## includes extended item information - examples:
##           labels variables levels
## 1      hair=FALSE      hair FALSE
## 2      hair=TRUE       hair  TRUE
## 3 feathers=FALSE  feathers FALSE
##
## includes extended transaction information - examples:
## transactionID
## 1      aardvark
## 2      antelope
## 3      bass

#Representar gráficamente la distribución de los items en las transacciones
image(ZooTrans)

```



```
#Para ver gráficamente que items son los más importantes:
#donde el mínimo soporte será 0.4 y reducimos el tamaño de los títulos
itemFrequencyPlot(ZooTrans, support = 0.4, cex.names=0.8)
```



```
#Usamos apriori para extraer los itemsets frecuentes con minsop 0.4.
iZoo <- apriori(ZooTrans, parameter = list(support = 0.4, target="frequent"))
```

```
## Apriori
##
```

```
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          NA    0.1    1 none FALSE          TRUE    5    0.4    1
## maxlen          target  ext
##    10 frequent itemsets FALSE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##    0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 40
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[39 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [22 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 5 6 7 done [0.00s].
## writing ... [730 set(s)] done [0.00s].
## creating S4 object ... done [0.00s].
```

```
#Ordenamos por el valor de soporte
iZoo <- sort(iZoo, by="support")
#Inspeccionamos los 10 primeros
inspect(head(iZoo, n=10))
```

```
##      items                                support
## [1] {venomous=FALSE}                      0.9207921
## [2] {domestic=FALSE}                      0.8712871
## [3] {fins=FALSE}                          0.8316832
## [4] {backbone=TRUE}                       0.8217822
## [5] {feathers=FALSE}                       0.8019802
## [6] {venomous=FALSE,domestic=FALSE} 0.8019802
## [7] {breathes=TRUE}                       0.7920792
## [8] {backbone=TRUE,venomous=FALSE} 0.7821782
## [9] {legs=has_legs}                       0.7722772
## [10] {airborne=FALSE}                     0.7623762
```

```
#Podemos consultar el tamaño de los itemsets frecuentes
size(iZoo)
```

```
## [1] 1 1 1 1 1 2 1 2 1 1 2 2 2 1 2 2 2 2 2 3 2 3 2 2 2 3 3 2 3 2 2 4 3
## [36] 3 3 2 2 3 1 2 2 2 3 3 2 2 2 3 3 3 3 3 3 2 3 3 3 3 4 4 4 3 4 4 5 1 2
## [71] 2 2 2 3 3 3 3 3 3 4 1 2 2 2 3 3 3 3 4 4 4 4 1 2 2 3 3 3 3 4 4 1 2 2 3
## [106] 3 3 4 4 1 2 2 2 3 3 3 3 3 3 4 4 4 4 4 5 5 1 2 2 3 3 3 3 3 3 3 4 4 4
## [141] 4 4 4 4 5 5 2 2 3 3 3 3 3 4 4 4 4 5 5 5 5 6 2 2 2 2 3 3 3 3 4 2 2 2
## [176] 3 3 3 3 3 3 3 3 3 3 4 4 4 4 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4
## [211] 4 4 4 4 4 4 4 4 4 5 5 5 5 2 3 3 3 3 3 4 4 4 4 4 4 4 4 5 5 5 5 6 6 2 2 2
## [246] 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 5 5 5 2 2 3 3 3 3 3 3 3 4 4 4
## [281] 4 4 4 4 4 4 4 4 4 4 4 5 5 5 2 2 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4
## [316] 4 4 4 4 5 5 5 5 5 5 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4
## [351] 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 6 6 6 2 2 2 3 3 3 3 3 3 4 4 4
## [386] 4 4 4 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 6 6 6 6 6 6
## [421] 7 7 1 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 1
## [456] 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 5 5 5 6 1 2 2 2 2 2 2 2 3 3 3
## [491] 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6
## [526] 6 6 1 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4
```

```
#Representamos con un diagrama de barras
barplot(table(size(iZoo)), xlab="itemset size", ylab="count")
```



6

```
## [21] {milk=TRUE}      0.4059406
## [22] {type=mammal}    0.4059406
```

```
#Sacamos un vector lógico indicando que itemsets es máxima
imaxZoo <- iZoo[is.maximal(iZoo)]
#Mostramos los 6 primeros ordenados por su valor de soporte
inspect(head(sort(imaxZoo, by="support")))
```

```
##      items      support
## [1] {feathers=FALSE,
##      airborne=FALSE,
##      toothed=TRUE,
##      backbone=TRUE,
##      venomous=FALSE,
##      tail=TRUE}      0.4653465
## [2] {hair=FALSE,
##      eggs=TRUE,
##      milk=FALSE,
##      venomous=FALSE,
##      domestic=FALSE} 0.4554455
## [3] {feathers=FALSE,
##      airborne=FALSE,
##      toothed=TRUE,
##      backbone=TRUE,
##      venomous=FALSE,
##      domestic=FALSE} 0.4554455
## [4] {aquatic=FALSE,
##      breathes=TRUE,
##      venomous=FALSE,
##      fins=FALSE,
##      legs=has_legs,
##      domestic=FALSE} 0.4554455
## [5] {aquatic=FALSE,
##      backbone=TRUE,
##      breathes=TRUE,
##      venomous=FALSE,
##      fins=FALSE,
##      legs=has_legs,
##      tail=TRUE}      0.4554455
## [6] {backbone=TRUE,
##      breathes=TRUE,
##      venomous=FALSE,
##      fins=FALSE,
##      legs=has_legs,
##      tail=TRUE,
##      domestic=FALSE} 0.4554455
```

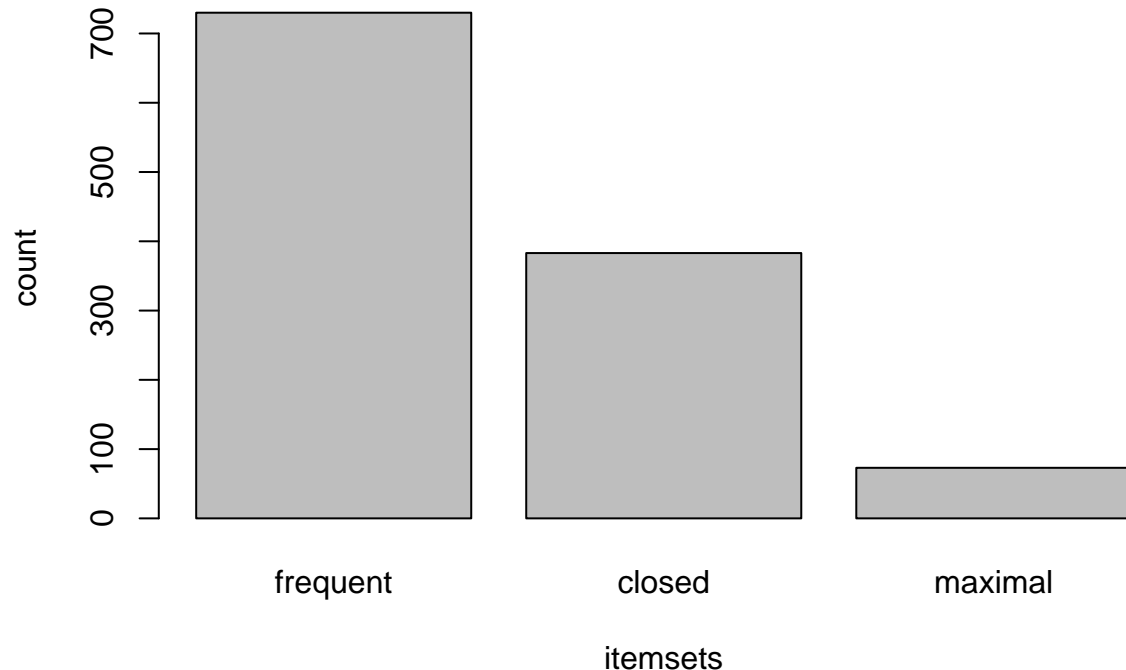
```
#Sacamos un vector lógico indicando que itemsets es cerrado
icloZoo <- iZoo[is.closed(iZoo)]
#Mostramos los 6 primeros ordenados por su valor de soporte
inspect(head(sort(icloZoo, by="support")))
```

```
##      items      support
## [1] {venomous=FALSE}      0.9207921
## [2] {domestic=FALSE}      0.8712871
## [3] {fins=FALSE}          0.8316832
```

```
## [4] {backbone=TRUE}          0.8217822
## [5] {feathers=FALSE}         0.8019802
## [6] {venomous=FALSE,domestic=FALSE} 0.8019802
```

*#Podemos pintar un gráfico de barras para ver la cantidad de itemsets frecuentes, cerrados
#y maximales que se han generado*

```
barplot( c(frequent=length(iZoo), closed=length(icloZoo), maximal=length(imaxZoo)),
        ylab="count", xlab="itemsets")
```



*#Usamos apriori para extraer las reglas con mínimo soporte 0.4 y confianza 0.8
#con una longitud minima de 2*

```
rules <- apriori(ZooTrans, parameter = list(support = 0.4, confidence = 0.8, minlen = 2))
```

```
## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          0.8   0.1   1 none FALSE              TRUE     5   0.4     2
## maxlen target  ext
##          10 rules FALSE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##    0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 40
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[39 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [22 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 5 6 7 done [0.00s].
## writing ... [1975 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].
```



```
#Obtenemos información resumida del conjunto
summary(rules)
```

```
## set of 1975 rules
##
## rule length distribution (lhs + rhs):sizes
##   2   3   4   5   6   7
## 98 407 685 579 192  14
##
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  2.000  3.000  4.000  4.204  5.000  7.000
##
## summary of quality measures:
##      support      confidence      lift
## Min.   :0.4059   Min.   :0.8000   Min.   :0.9182
## 1st Qu.:0.4158   1st Qu.:0.8881   1st Qu.:1.0602
## Median :0.4554   Median :0.9535   Median :1.1859
## Mean   :0.4766   Mean   :0.9346   Mean   :1.1985
## 3rd Qu.:0.5149   3rd Qu.:1.0000   3rd Qu.:1.2469
## Max.   :0.8020   Max.   :1.0000   Max.   :2.4634
##
## mining info:
##      data ntransactions support confidence
## ZooTrans      101      0.4      0.8
```

```
#Podemos ver las reglas (lhs es el antecedente y rhs el consecuente de la regla) y sus
#valores para las medidas soporte, confianza y lift
inspect(head(rules))
```

```
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE} => {type=mammal} 0.4059406 1      2.463415
## [2] {type=mammal} => {milk=TRUE} 0.4059406 1      2.463415
## [3] {milk=TRUE} => {breathes=TRUE} 0.4059406 1      1.262500
## [4] {milk=TRUE} => {feathers=FALSE} 0.4059406 1      1.246914
## [5] {milk=TRUE} => {backbone=TRUE} 0.4059406 1      1.216867
## [6] {milk=TRUE} => {venomous=FALSE} 0.4059406 1      1.086022
```

```
#También podemos ver solo los valores de las medidas de calidad
quality(head(rules))
```

```
##      support confidence      lift
## 1 0.4059406      1 2.463415
## 2 0.4059406      1 2.463415
## 3 0.4059406      1 1.262500
## 4 0.4059406      1 1.246914
## 5 0.4059406      1 1.216867
## 6 0.4059406      1 1.086022
```

```
#Podemos ordenar las reglas por el campo que más nos interese
rulesSorted = sort(rules, by="confidence")
inspect(head(rulesSorted))
```

```
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE} => {type=mammal} 0.4059406 1      2.463415
## [2] {type=mammal} => {milk=TRUE} 0.4059406 1      2.463415
## [3] {milk=TRUE} => {breathes=TRUE} 0.4059406 1      1.262500
```

```
## [4] {milk=TRUE}    => {feathers=FALSE} 0.4059406 1      1.246914
## [5] {milk=TRUE}    => {backbone=TRUE} 0.4059406 1      1.216867
## [6] {milk=TRUE}    => {venomous=FALSE} 0.4059406 1      1.086022
```

#Seleccionar un subconjunto de reglas que cumplan una condición. Por ejemplo, seleccionamos las reglas que tenga lift > 1.2 y que en el consecuente de la regla tengan el itemset feathers=FALSE

```
rulesNoFeathers <- subset(rules, subset = lhs %in% "feathers=FALSE" & lift > 1.2)
inspect(head(rulesNoFeathers))
```

```
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,milk=TRUE}    => {type=mammal}    0.4059406 1
## [2] {feathers=FALSE,type=mammal} => {milk=TRUE}      0.4059406 1
## [3] {feathers=FALSE,milk=TRUE}    => {breathes=TRUE} 0.4059406 1
## [4] {feathers=FALSE,milk=TRUE}    => {backbone=TRUE} 0.4059406 1
## [5] {feathers=FALSE,type=mammal} => {breathes=TRUE} 0.4059406 1
## [6] {feathers=FALSE,type=mammal} => {backbone=TRUE} 0.4059406 1
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 1.262500
## [4] 1.216867
## [5] 1.262500
## [6] 1.216867
```

#Eliminar las reglas redundantes

```
subsetMatrix <- is.subset(rulesSorted, rulesSorted)
subsetMatrix[lower.tri(subsetMatrix, diag=T)] <- NA
redundant <- colSums(subsetMatrix, na.rm=T) >= 1
rulesPruned <- rulesSorted[!redundant] # remove redundant rules
inspect(head(rulesPruned))
```

```
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}    => {type=mammal}    0.4059406 1      2.463415
## [2] {milk=TRUE}    => {breathes=TRUE} 0.4059406 1      1.262500
## [3] {milk=TRUE}    => {feathers=FALSE} 0.4059406 1      1.246914
## [4] {milk=TRUE}    => {backbone=TRUE} 0.4059406 1      1.216867
## [5] {milk=TRUE}    => {venomous=FALSE} 0.4059406 1      1.086022
## [6] {type=mammal} => {breathes=TRUE} 0.4059406 1      1.262500
```

#También podemos calcular para itemsets o para reglas otras medidas de calidad

```
mInteres <- interestMeasure(rulesPruned, measure=c("hyperConfidence",
"leverage" ,"phi", "gini"), transactions=ZooTrans)
```

#Podemos calcular estas medidas para nuestras reglas podadas y añadirselas a la sección #quality para que los valores de las medidas nuevas salgan también cuando inspeccionamos las reglas:

```
copRulesPruned <- rulesPruned
quality(rulesPruned) <- cbind(quality(rulesPruned), mInteres)
inspect(head(sort(rulesPruned, by="phi")))
```

```
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE}    => {type=mammal}    0.4059406 1.0000000
## [2] {eggs=TRUE}    => {milk=FALSE}    0.5742574 0.9830508
## [3] {hair=FALSE,eggs=TRUE}    => {milk=FALSE}    0.5346535 1.0000000
## [4] {hair=FALSE}    => {milk=FALSE}    0.5544554 0.9655172
## [5] {milk=FALSE,venomous=FALSE} => {eggs=TRUE}    0.5148515 1.0000000
```

```
## [6] {hair=FALSE}          => {eggs=TRUE}    0.5346535 0.9310345
##      lift      hyperConfidence leverage   phi      gini
## [1] 2.463415 1            0.2411528 1.0000000 0.4823057
## [2] 1.654802 1            0.2272326 0.9388479 0.4251212
## [3] 1.683333 1            0.2170375 0.8860623 0.3786612
## [4] 1.625287 1            0.2133124 0.8785027 0.3722276
## [5] 1.711864 1            0.2140967 0.8691651 0.3670228
## [6] 1.593805 1            0.1991962 0.8173815 0.3245923
```

```
library(arulesViz)
```

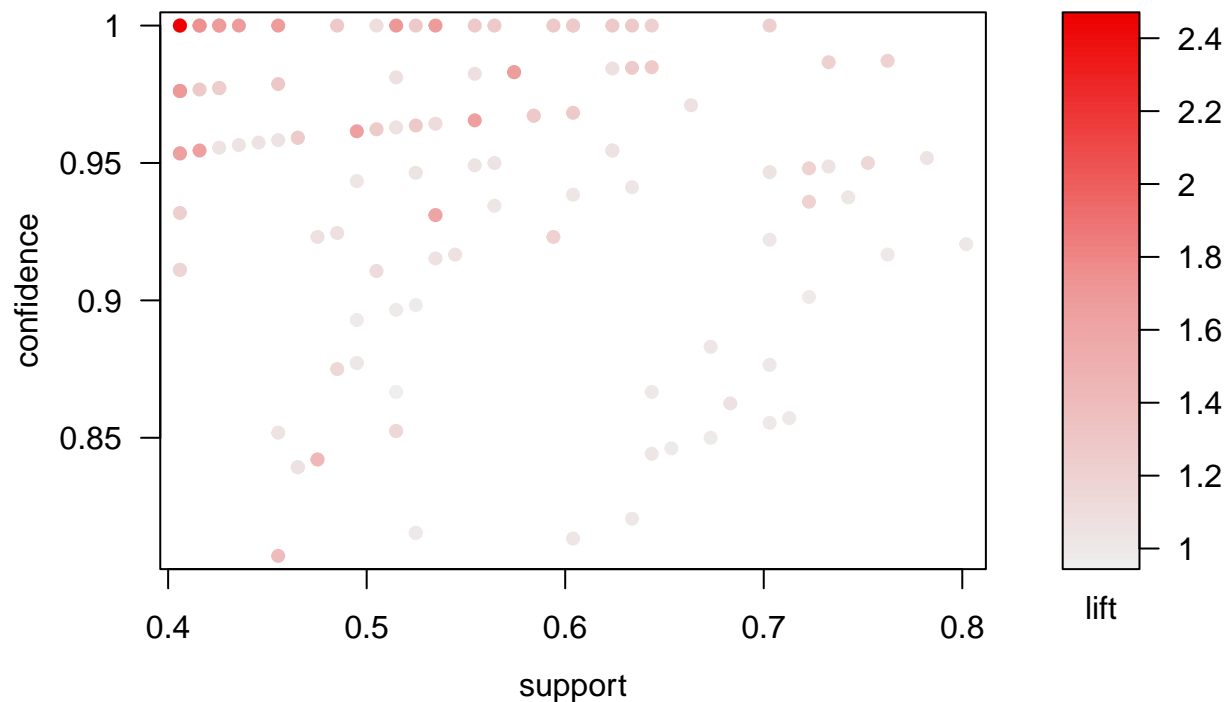
```
## Loading required package: grid
```

```
## Warning: failed to assign NativeSymbolInfo for lhs since lhs is already
## defined in the 'lazyeval' namespace
```

```
## Warning: failed to assign NativeSymbolInfo for rhs since rhs is already
## defined in the 'lazyeval' namespace
```

```
#Utilizar la función plot para representar las reglas en función de las medidas de calidad
plot(rulesPruned)
```

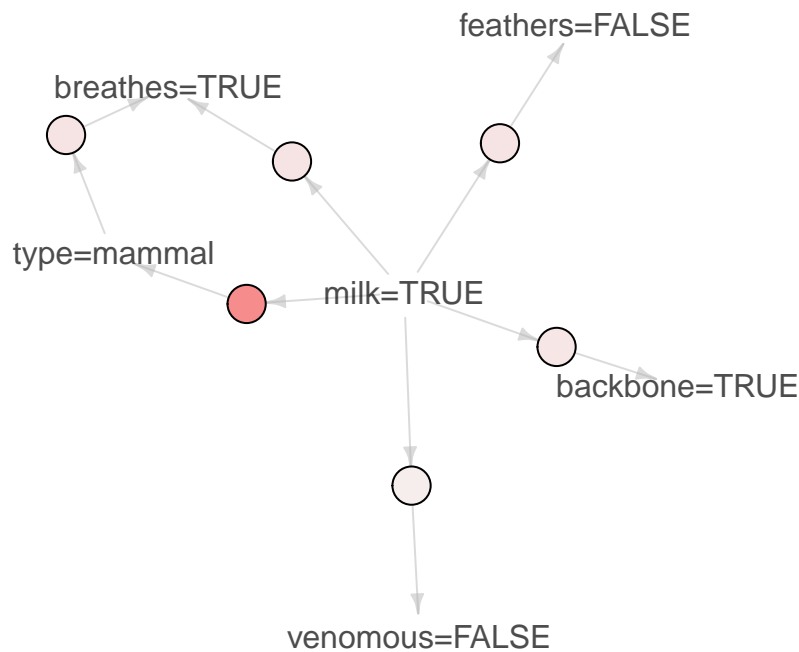
Scatter plot for 135 rules



```
#Podemos modificar el tipo de gráfico generado cambiando el parámetro método de la función
#plot
plot(rulesPruned[1:6], method="graph", control=list(type="items"))
```

Graph for 6 rules

size: support (0.406 – 0.406)
color: lift (1.086 – 2.463)



*#Podemos visualizar las reglas como una matriz agrupada. Los antecedentes en las columnas son #agrupados usando clustering. En modo interactivo podemos hacer zoom del nodo que queramos #estudiar y acceder a las reglas que lo componen para inspeccionarlas.
#try: plot(rulesPruned, method="grouped", interactive=TRUE)*

Análisis de reglas

```
#####
##### ANÁLISIS DE REGLAS #####
#####

#Vamos a analizar algunas reglas por soporte
inspect((sort(copRulesPruned, by="support"))[1:10])
```

##	lhs	rhs	support	confidence	lift
## [1]	{domestic=FALSE}	=> {venomous=FALSE}	0.8019802	0.9204545	0.9996334
## [2]	{backbone=TRUE}	=> {venomous=FALSE}	0.7821782	0.9518072	1.0336831
## [3]	{legs=has_legs}	=> {fins=FALSE}	0.7623762	0.9871795	1.1869658
## [4]	{fins=FALSE}	=> {venomous=FALSE}	0.7623762	0.9166667	0.9955197
## [5]	{breathes=TRUE}	=> {fins=FALSE}	0.7524752	0.9500000	1.1422619
## [6]	{breathes=TRUE}	=> {venomous=FALSE}	0.7425743	0.9375000	1.0181452
## [7]	{tail=TRUE}	=> {backbone=TRUE}	0.7326733	0.9866667	1.2006426
## [8]	{legs=has_legs}	=> {venomous=FALSE}	0.7326733	0.9487179	1.0303281
## [9]	{airborne=FALSE}	=> {feathers=FALSE}	0.7227723	0.9480519	1.1821388
## [10]	{legs=has_legs}	=> {breathes=TRUE}	0.7227723	0.9358974	1.1815705

*#Vemos como esta regla, la 1, tiene un lift menor que 1, por lo que no se espera que sea de utilidad
#Veamos la confianza del consecuente, no es venenoso*

```
inspect(iZoo[size(iZoo)==1])
```

```
##      items      support
## [1] {venomous=FALSE} 0.9207921
## [2] {domestic=FALSE} 0.8712871
## [3] {fins=FALSE}     0.8316832
## [4] {backbone=TRUE}  0.8217822
## [5] {feathers=FALSE} 0.8019802
## [6] {breathes=TRUE}   0.7920792
## [7] {legs=has_legs}   0.7722772
## [8] {airborne=FALSE} 0.7623762
## [9] {tail=TRUE}        0.7425743
## [10] {aquatic=FALSE}   0.6435644
## [11] {toothed=TRUE}    0.6039604
## [12] {milk=FALSE}      0.5940594
## [13] {eggs=TRUE}         0.5841584
## [14] {hair=FALSE}      0.5742574
## [15] {catsize=FALSE}    0.5643564
## [16] {predator=TRUE}     0.5544554
## [17] {predator=FALSE}   0.4455446
## [18] {catsize=TRUE}      0.4356436
## [19] {hair=TRUE}         0.4257426
## [20] {eggs=FALSE}        0.4158416
## [21] {milk=TRUE}        0.4059406
## [22] {type=mammal}     0.4059406
```

#Por lo que vamos a compararlas:

```
inspect((sort(copRulesPruned, by="support"))[1])
```

```
##      lhs      rhs      support  confidence lift
## [1] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
```

```
inspect(iZoo[size(iZoo)==1][1])
```

```
##      items      support
## [1] {venomous=FALSE} 0.9207921
```

#Vemos como la confianza de la regla y el soporte del consecuente son iguales, y al tener el lift menor que 1, tenemos una regla que no nos aporta nada. Por lo que ya tenemos un criterio para descartar reglas de utilidad.

#Seguimos analizando, ordenando por lift

```
inspect((sort(copRulesPruned, by="lift"))[1:10])
```

```
##      lhs      rhs      support  confidence
## [1] {milk=TRUE} => {type=mammal} 0.4059406 1.0000000
## [2] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [3] {milk=FALSE,venomous=FALSE} => {eggs=TRUE} 0.5148515 1.0000000
## [4] {eggs=TRUE,backbone=TRUE} => {hair=FALSE} 0.4059406 0.9761905
## [5] {hair=FALSE,catsize=FALSE} => {milk=FALSE} 0.4356436 1.0000000
## [6] {eggs=TRUE,catsize=FALSE} => {milk=FALSE} 0.4554455 1.0000000
## [7] {hair=FALSE,eggs=TRUE} => {milk=FALSE} 0.5346535 1.0000000
## [8] {hair=FALSE,fins=FALSE} => {milk=FALSE} 0.4257426 1.0000000
## [9] {eggs=TRUE} => {milk=FALSE} 0.5742574 0.9830508
## [10] {hair=FALSE,venomous=FALSE} => {eggs=TRUE} 0.4950495 0.9615385
##      lift
```

```
## [1] 2.463415
## [2] 1.741379
## [3] 1.711864
## [4] 1.699918
## [5] 1.683333
## [6] 1.683333
## [7] 1.683333
## [8] 1.683333
## [9] 1.654802
## [10] 1.646023
```

```
#La regla 9 puede ser interesante, analicemos su consecuente
inspect(iZoo[size(iZoo)==1])
```

```
##      items      support
## [1] {venomous=FALSE} 0.9207921
## [2] {domestic=FALSE} 0.8712871
## [3] {fins=FALSE}    0.8316832
## [4] {backbone=TRUE} 0.8217822
## [5] {feathers=FALSE} 0.8019802
## [6] {breathes=TRUE}  0.7920792
## [7] {legs=has_legs}  0.7722772
## [8] {airborne=FALSE} 0.7623762
## [9] {tail=TRUE}      0.7425743
## [10] {aquatic=FALSE} 0.6435644
## [11] {toothed=TRUE}  0.6039604
## [12] {milk=FALSE}    0.5940594
## [13] {eggs=TRUE}      0.5841584
## [14] {hair=FALSE}    0.5742574
## [15] {catsize=FALSE}  0.5643564
## [16] {predator=TRUE}   0.5544554
## [17] {predator=FALSE} 0.4455446
## [18] {catsize=TRUE}    0.4356436
## [19] {hair=TRUE}       0.4257426
## [20] {eggs=FALSE}      0.4158416
## [21] {milk=TRUE}      0.4059406
## [22] {type=mammal}    0.4059406
```

```
#Las comparamos:
inspect((sort(copRulesPruned, by="lift"))[9])
```

```
##      lhs      rhs      support  confidence lift
## [1] {eggs=TRUE} => {milk=FALSE} 0.5742574 0.9830508 1.654802
inspect(iZoo[size(iZoo)==1][12])
```

```
##      items      support
## [1] {milk=FALSE} 0.5940594
```

```
#Tenemos un lift alto, un soporte en el consecuente del 0.59, y pasamos a una confianza de la regla del
#esta regla sería interesante. por lo que si pone huevos, no pone leche
#Veamos que animales podrían ser estos:
vector.pone.huevos.no.da.leche <- (Zoo[["eggs"]==TRUE & Zoo[["milk"]==FALSE])
valores.pone.huevos.no.da.leche <- (Zoo[vector.pone.huevos.no.da.leche,])
dim(valores.pone.huevos.no.da.leche)
```

```
## [1] 58 17
```

```
head(valores.pone.huevos.no.da.leche)
```

```
##          hair feathers eggs  milk airborne aquatic predator toothed
## bass      FALSE      FALSE TRUE  FALSE      FALSE    TRUE      TRUE    TRUE
## carp      FALSE      FALSE TRUE  FALSE      FALSE    TRUE      FALSE   TRUE
## catfish   FALSE      FALSE TRUE  FALSE      FALSE    TRUE      TRUE    TRUE
## chicken   FALSE      TRUE  TRUE  FALSE      TRUE     FALSE     FALSE   FALSE
## chub      FALSE      FALSE TRUE  FALSE      FALSE    TRUE      TRUE    TRUE
## clam      FALSE      FALSE TRUE  FALSE      FALSE    FALSE     TRUE    FALSE
##          backbone breathes venomous  fins      legs  tail domestic catsize
## bass          TRUE      FALSE      FALSE TRUE  no_legs  TRUE      FALSE  FALSE
## carp          TRUE      FALSE      FALSE TRUE  no_legs  TRUE      TRUE    FALSE
## catfish       TRUE      FALSE      FALSE TRUE  no_legs  TRUE      FALSE  FALSE
## chicken       TRUE      TRUE       FALSE FALSE has_legs TRUE      TRUE    FALSE
## chub          TRUE      FALSE      FALSE TRUE  no_legs  TRUE      FALSE  FALSE
## clam          FALSE      FALSE      FALSE FALSE no_legs FALSE     FALSE  FALSE
##
##          type
## bass         fish
## carp         fish
## catfish      fish
## chicken      bird
## chub         fish
## clam  mollusc.et.al
```

#Donde tenemos 58 animales que cumplen estas condiciones, como puede ser el pollo

#Seguimos analizando, ordenando por confidence

```
inspect((sort(copRulesPruned, by="confidence"))[1:10])
```

```
##      lhs          rhs      support  confidence lift
## [1] {milk=TRUE}  => {type=mammal}  0.4059406 1      2.463415
## [2] {milk=TRUE}  => {breathes=TRUE} 0.4059406 1      1.262500
## [3] {milk=TRUE}  => {feathers=FALSE} 0.4059406 1      1.246914
## [4] {milk=TRUE}  => {backbone=TRUE}  0.4059406 1      1.216867
## [5] {milk=TRUE}  => {venomous=FALSE} 0.4059406 1      1.086022
## [6] {type=mammal} => {breathes=TRUE}  0.4059406 1      1.262500
## [7] {type=mammal} => {feathers=FALSE} 0.4059406 1      1.246914
## [8] {type=mammal} => {backbone=TRUE}  0.4059406 1      1.216867
## [9] {type=mammal} => {venomous=FALSE} 0.4059406 1      1.086022
## [10] {eggs=FALSE} => {feathers=FALSE} 0.4158416 1      1.246914
```

#Las 5 primeras reglas pueden ser interesantes, analicemos su consecuente

```
inspect(iZoo[size(iZoo)==1])
```

```
##      items          support
## [1] {venomous=FALSE} 0.9207921
## [2] {domestic=FALSE} 0.8712871
## [3] {fins=FALSE}     0.8316832
## [4] {backbone=TRUE}  0.8217822
## [5] {feathers=FALSE} 0.8019802
## [6] {breathes=TRUE}  0.7920792
## [7] {legs=has_legs}  0.7722772
## [8] {airborne=FALSE} 0.7623762
## [9] {tail=TRUE}      0.7425743
## [10] {aquatic=FALSE} 0.6435644
```

```
## [11] {toothed=TRUE}      0.6039604
## [12] {milk=FALSE}        0.5940594
## [13] {eggs=TRUE}         0.5841584
## [14] {hair=FALSE}        0.5742574
## [15] {catsize=FALSE}     0.5643564
## [16] {predator=TRUE}     0.5544554
## [17] {predator=FALSE}    0.4455446
## [18] {catsize=TRUE}      0.4356436
## [19] {hair=TRUE}         0.4257426
## [20] {eggs=FALSE}        0.4158416
## [21] {milk=TRUE}         0.4059406
## [22] {type=mammal}       0.4059406
```

#Las comparamos:

```
inspect((sort(copRulesPruned, by="lift"))[1:5])
```

```
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE}                        => {type=mammal} 0.4059406 1.0000000
## [2] {milk=FALSE,backbone=TRUE}         => {hair=FALSE} 0.4158416 1.0000000
## [3] {milk=FALSE,venomous=FALSE}         => {eggs=TRUE}  0.5148515 1.0000000
## [4] {eggs=TRUE,backbone=TRUE}          => {hair=FALSE} 0.4059406 0.9761905
## [5] {hair=FALSE,catsize=FALSE}         => {milk=FALSE} 0.4356436 1.0000000
##      lift
## [1] 2.463415
## [2] 1.741379
## [3] 1.711864
## [4] 1.699918
## [5] 1.683333
```

```
inspect(iZoo[size(iZoo)==1][c(22,14,13,12)])
```

```
##      items      support
## [1] {type=mammal} 0.4059406
## [2] {hair=FALSE}  0.5742574
## [3] {eggs=TRUE}   0.5841584
## [4] {milk=FALSE}  0.5940594
```

#Tenemos un lift alto, un soporte en el consecuente de entre el 0.40 y 0.59, y pasamos a una confianza #estas reglas serán interesantes.

Análisis de reglas en grupos

```
#####
##### ANÁLISIS DE REGLAS EN GRUPOS #####
#####
data(Zoo)
#Convertimos las variables booleanas a factor
Zoo[["hair"]] = as.factor(Zoo[["hair"]])
Zoo[["feathers"]] = as.factor(Zoo[["feathers"]])
Zoo[["eggs"]] = as.factor(Zoo[["eggs"]])
Zoo[["milk"]] = as.factor(Zoo[["milk"]])
Zoo[["airborne"]] = as.factor(Zoo[["airborne"]])
Zoo[["aquatic"]] = as.factor(Zoo[["aquatic"]])
Zoo[["predator"]] = as.factor(Zoo[["predator"]])
```



```

Zoo[["toothed"]] = as.factor(Zoo[["toothed"]])
Zoo[["backbone"]] = as.factor(Zoo[["backbone"]])
Zoo[["breathes"]] = as.factor(Zoo[["breathes"]])
Zoo[["venomous"]] = as.factor(Zoo[["venomous"]])
Zoo[["fins"]] = as.factor(Zoo[["fins"]])
Zoo[["tail"]] = as.factor(Zoo[["tail"]])
Zoo[["domestic"]] = as.factor(Zoo[["domestic"]])
Zoo[["catsize"]] = as.factor(Zoo[["catsize"]])
#De el único atributo continuo lo dividimos en intervalos
Zoo[["legs"]] = ordered( cut ( Zoo[["legs"]], c(-Inf,0,Inf) ) ,
                        labels = c ("FALSE", "TRUE"))
#Convertimos el data.frame en un conjunto de transacciones con la función as
ZooTrans <- as(Zoo,"transactions")

#Lo primero, vamos a realizar de nuevo apriori, pero cambiando los parámetros:
iZoo <- apriori(ZooTrans, parameter = list(support = 0.1, target="frequent", maxlen=2))

## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          NA      0.1    1 none FALSE              TRUE      5      0.1      1
## maxlen target ext
##          2 frequent itemsets FALSE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##    0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 10
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[39 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [34 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2

## Warning in apriori(ZooTrans, parameter = list(support = 0.1, target =
## "frequent", : Mining stopped (maxlen reached). Only patterns up to a length
## of 2 returned!

## done [0.00s].
## writing ... [418 set(s)] done [0.00s].
## creating S4 object ... done [0.00s].
rules <- apriori(ZooTrans, parameter = list(support = 0.1, confidence = 0.1, minlen = 2, maxlen=3))

## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          0.1      0.1    1 none FALSE              TRUE      5      0.1      2
## maxlen target ext
##          3 rules FALSE
##

```

```
## Algorithmic control:
## filter tree heap memopt load sort verbose
## 0.1 TRUE TRUE FALSE TRUE 2 TRUE
##
## Absolute minimum support count: 10
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[39 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [34 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3

## Warning in apriori(ZooTrans, parameter = list(support = 0.1, confidence =
## 0.1, : Mining stopped (maxlen reached). Only patterns up to a length of 3
## returned!

## done [0.00s].
## writing ... [7500 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].

#De forma que queremos reglas que tengan longitud de 2 o 3, con un soporte del 0.4 y confianza del 0.6
#Ordenamos las reglas por lift
sortRules <- (sort(rules,by="lift"))
#Eliminamos las reglas redundantes
subsetMatrix <- is.subset(sortRules, sortRules)
subsetMatrix[lower.tri(subsetMatrix, diag=T)] <- NA
redundant <- colSums(subsetMatrix, na.rm=T) >= 1
rulesPruned <- sortRules[!redundant] # remove redundant rules
#Vemos las primeras reglas ya "arregladas", con tamaño 2 para comenzar el análisis
inspect(head(rulesPruned[size(rulesPruned)==2]))

##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {fins=TRUE}    0.1287129 1.0000000  5.941176
## [2] {type=bird}      => {feathers=TRUE} 0.1980198 1.0000000  5.050000
## [3] {type=fish}      => {breathes=FALSE} 0.1287129 1.0000000  4.809524
## [4] {type=fish}      => {legs=FALSE}    0.1287129 1.0000000  4.391304
## [5] {fins=TRUE}      => {legs=FALSE}    0.1584158 0.9411765  4.132992
## [6] {breathes=FALSE} => {fins=TRUE}    0.1287129 0.6190476  3.677871

#De esta forma voy a analizar la regla 1:
consecuentePositivo <- subset(rulesPruned,subset = rhs %in% "fins=TRUE")
inspect(consecuentePositivo[size(consecuentePositivo)==2])

##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {fins=TRUE}    0.1287129 1.0000000  5.941176
## [2] {breathes=FALSE} => {fins=TRUE}    0.1287129 0.6190476  3.677871
## [3] {hair=FALSE}     => {fins=TRUE}    0.1485149 0.2586207  1.536511
inspect(iZoo[size(iZoo)==1][3])

##      items      support
## [1] {fins=TRUE} 0.1683168

#Voy a buscar reglas que tenga el consecuente de esta regla negado:
consecuenteNegado <- subset(rulesPruned,subset = rhs %in% "fins=FALSE" )
inspect(consecuenteNegado)

##      lhs                rhs      support  confidence
```

```

## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000
## [2] {type=bird} => {fins=FALSE} 0.1980198 1.0000000
## [3] {feathers=TRUE} => {fins=FALSE} 0.1980198 1.0000000
## [4] {airborne=TRUE} => {fins=FALSE} 0.2376238 1.0000000
## [5] {toothed=FALSE} => {fins=FALSE} 0.3960396 1.0000000
## [6] {predator=FALSE,tail=FALSE} => {fins=FALSE} 0.1188119 1.0000000
## [7] {legs=TRUE,tail=FALSE} => {fins=FALSE} 0.2079208 1.0000000
## [8] {milk=TRUE,predator=FALSE} => {fins=FALSE} 0.1881188 1.0000000
## [9] {predator=FALSE,type=mammal} => {fins=FALSE} 0.1881188 1.0000000
## [10] {eggs=FALSE,predator=FALSE} => {fins=FALSE} 0.1881188 1.0000000
## [11] {eggs=FALSE,catsize=FALSE} => {fins=FALSE} 0.1089109 1.0000000
## [12] {hair=TRUE,catsize=FALSE} => {fins=FALSE} 0.1287129 1.0000000
## [13] {predator=FALSE,catsize=TRUE} => {fins=FALSE} 0.1584158 1.0000000
## [14] {legs=TRUE,catsize=FALSE} => {fins=FALSE} 0.4059406 1.0000000
## [15] {breathes=TRUE,catsize=FALSE} => {fins=FALSE} 0.4059406 1.0000000
## [16] {hair=FALSE,legs=TRUE} => {fins=FALSE} 0.3564356 1.0000000
## [17] {eggs=TRUE,legs=TRUE} => {fins=FALSE} 0.3960396 1.0000000
## [18] {eggs=TRUE,breathes=TRUE} => {fins=FALSE} 0.3861386 1.0000000
## [19] {milk=FALSE,legs=TRUE} => {fins=FALSE} 0.3960396 1.0000000
## [20] {milk=FALSE,breathes=TRUE} => {fins=FALSE} 0.3861386 1.0000000
## [21] {legs=TRUE} => {fins=FALSE} 0.7623762 0.9871795
## [22] {hair=TRUE} => {fins=FALSE} 0.4059406 0.9534884
## [23] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000
## [24] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769
## [25] {predator=FALSE,domestic=FALSE} => {fins=FALSE} 0.3069307 0.9117647
## [26] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111
## [27] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619
## [28] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390
## [29] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390
## [30] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053
## [31] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570
## [32] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818
## [33] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818
## [34] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807
## [35] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235
## [36] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667
## [37] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610
## [38] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208
## [39] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571
## [40] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793
## [41] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115
## [42] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778
## lift
## [1] 1.2023810
## [2] 1.2023810
## [3] 1.2023810
## [4] 1.2023810
## [5] 1.2023810
## [6] 1.2023810
## [7] 1.2023810
## [8] 1.2023810
## [9] 1.2023810
## [10] 1.2023810
## [11] 1.2023810

```

```
## [12] 1.2023810
## [13] 1.2023810
## [14] 1.2023810
## [15] 1.2023810
## [16] 1.2023810
## [17] 1.2023810
## [18] 1.2023810
## [19] 1.2023810
## [20] 1.2023810
## [21] 1.1869658
## [22] 1.1464563
## [23] 1.1422619
## [24] 1.1098901
## [25] 1.0962885
## [26] 1.0955026
## [27] 1.0878685
## [28] 1.0850755
## [29] 1.0850755
## [30] 1.0125313
## [31] 0.9955197
## [32] 0.9837662
## [33] 0.9837662
## [34] 0.9561102
## [35] 0.9500294
## [36] 0.9458730
## [37] 0.9374496
## [38] 0.9369202
## [39] 0.9232568
## [40] 0.8914204
## [41] 0.8672912
## [42] 0.6345899
```

```
inspect(consecuentePositivo[size(consecuentePositivo)==2])
```

```
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {fins=TRUE} 0.1287129 1.0000000 5.941176
## [2] {breathes=FALSE}    => {fins=TRUE} 0.1287129 0.6190476 3.677871
## [3] {hair=FALSE}        => {fins=TRUE} 0.1485149 0.2586207 1.536511
```

```
consecuenteNegadoYRegla1 <- subset(consecuenteNegado, subset = lhs %in% "type=fish")
inspect(consecuenteNegadoYRegla1)
consecuenteNegadoYRegla2 <- subset(consecuenteNegado, subset = lhs %in% "breathes=FALSE")
inspect(consecuenteNegadoYRegla2)
consecuenteNegadoYRegla3 <- subset(consecuenteNegado, subset = lhs %in% "hair=FALSE")
inspect(consecuenteNegadoYRegla3[size(consecuenteNegadoYRegla3)==3])
```

```
##      lhs                rhs      support  confidence lift
## [1] {hair=FALSE,legs=TRUE} => {fins=FALSE} 0.3564356 1          1.202381
```

```
inspect(iZoo[size(iZoo)==1][32])
```

```
##      items      support
## [1] {fins=FALSE} 0.8316832
```

```
###FUNCIÓN CREADA
```

```
MiMetodo = function(fsoporte,fconfianza,fminlen,fmaxlen,limitelif,limiteconfianza,limitesoporte,tamasiz
```

```

#Inicializamos la variable de salida
misrules=NULL
#Realizamos a priori
rules <- apriori(ZooTrans, parameter = list(support = fsoporte, confidence = fconfianza, minlen = fminlen))
#Si queremos eliminar reglas por los valores de lift, confianza o soporte se podan
rulesLimiteLift <- subset(rules, lift > limitelif)
rulesLimiteConfianza <- subset(rulesLimiteLift, confidence <= limiteconfianza)
rulesLimiteSoporte <- subset(rulesLimiteConfianza, support < limitesoporte)
#Eliminamos las reglas redundantes
sortRules <- sort(rulesLimiteSoporte, by = "lift")
subsetMatrix <- is.subset(sortRules, sortRules)
subsetMatrix[lower.tri(subsetMatrix, diag=T)] <- NA
redundant <- colSums(subsetMatrix, na.rm=T) >= 1
rulesPruned <- sortRules[!redundant]
#Realizamos el inspect en función del tamaño deseado
salidaInspect <- inspect((rulesPruned[size(rulesPruned)==tamsize]))
numeroReglas <- dim(salidaInspect)[1]
#Divido la salida del inspect en reglas con type en el consecuente y reglas sin type:
#Nota: las reglas con type, no las he analizado, realizaría otra función
salidaInspectType=NULL;salidaInspectNoType=NULL
for (i in 1:(dim(salidaInspect)[1])){
  Cconsecuente <- salidaInspect[i,3];Cconsecuente <- as.character(Cconsecuente);tamachar <- nchar(Cconsecuente)
  Cconsecuente <- substr(Cconsecuente,start=2,stop=5)
  if (Cconsecuente=="type"){
    salidaInspectType = rbind(salidaInspectType,salidaInspect[i,])
  } else {
    salidaInspectNoType = rbind(salidaInspectNoType,salidaInspect[i,])
  }
}
#Me quedo con las reglas que no tienen type en el consecuente
salidaInspect <- salidaInspectNoType
tamaRecortado <- dim(salidaInspect)[1]
for (h in 1:tamaRecortado){
  #Sacar consecuente
  Cconsecuente <- salidaInspect[h,3];Cconsecuente <- as.character(Cconsecuente);tamachar <- nchar(Cconsecuente)
  Cconsecuente <- substr(Cconsecuente,start=2,stop=tamachar)
  consecuentePositivo <- subset(rulesPruned, subset = rhs %in% Cconsecuente)
  tamaconse <- nchar(Cconsecuente)
  #Niego el consecuente
  CconsecuenteNegado=NULL
  if ((substr(Cconsecuente,start=(tamaconse-4),stop = tamaconse))==FALSE){
    CconsecuenteNegado <- substr(Cconsecuente,start=1,stop=(tamaconse-5))
    CconsecuenteNegado <- paste(CconsecuenteNegado,"TRUE",sep = "")
  } else if ((substr(Cconsecuente,start=(tamaconse-3),stop = tamaconse))==TRUE){
    CconsecuenteNegado <- substr(Cconsecuente,start=1,stop=(tamaconse-4))
    CconsecuenteNegado <- paste(CconsecuenteNegado,"FALSE",sep = "")
  }
  consecuenteNegado <- subset(rulesPruned,subset = rhs %in% CconsecuenteNegado )
  print("Número de reglas con consecuente negado");length(consecuenteNegado)
  inspect(consecuenteNegado)
  inspectPositivas <- inspect(consecuentePositivo[size(consecuentePositivo)==2])

  #Busco reglas con el consecuente negado y que tengan el antecedente de las reglas con consecuente p

```

```

for ( j in 1:((dim(inspectPositivas)[1]))){
  misrulesNuevas=NULL
  Cantecedente <- inspectPositivas[j,1];Cantecedente <- as.character(Cantecedente);tamachar <- nchar(Cantecedente)
  Cantecedente <- substr(Cantecedente,start=2,stop=tamachar)
  consecuenteNegadoYRegla <- subset(consecuenteNegado, subset = lhs %in% Cantecedente)
  misrulesNuevas = inspect(consecuenteNegadoYRegla[size(consecuenteNegadoYRegla)>2])
  misrulesNuevas = rbind(misrulesNuevas,misrulesNuevas)
  if(is.null(misrulesNuevas)){

  } else if ((dim(misrulesNuevas)[1])>0){
    misrules = rbind(misrules,inspectPositivas[j,])
    misrules = rbind(misrules,misrulesNuevas)
  }
}
if (is.null(misrules)){

} else {
  #Elimino las reglas con lift menor de 1.2
  for (g in (dim(misrules)[1]):1){
    if (misrules[g,6]<1.2){
      misrules = misrules[-g,]
    }
  }
}
}
return(misrules)
}

```

#Doy valores a los parámetros y ejecuto: NOTA: LA EJECUCIÓN PUEDE TARDAR VARIOS MINÚTOS

```

fsoporte = 0.1;fconfianza = 0.1;fminlen = 2;fmaxlen = 3;limitelif = 0;limiteconfianza=1;limitesoporte=1
rules1 <- MiMetodo(fsoporte,fconfianza,fminlen,fmaxlen,limitelif,limiteconfianza,limitesoporte,tamasize)

```

```

## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          0.1   0.1   1 none FALSE                TRUE      5   0.1   2
## maxlen target  ext
##          3 rules FALSE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##    0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 10
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[39 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [34 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3
##
## Warning in apriori(ZooTrans, parameter = list(support = fsoporte,
## confidence = fconfianza, : Mining stopped (maxlen reached). Only patterns

```

up to a length of 3 returned!

done [0.00s].

writing ... [7500 rule(s)] done [0.00s].

creating S4 object ... done [0.00s].

##	lhs	rhs	support	confidence	lift
## [1]	{type=fish}	=> {fins=TRUE}	0.1287129	1.0000000	5.9411765
## [2]	{type=bird}	=> {feathers=TRUE}	0.1980198	1.0000000	5.0500000
## [3]	{type=fish}	=> {breathes=FALSE}	0.1287129	1.0000000	4.8095238
## [4]	{type=fish}	=> {legs=FALSE}	0.1287129	1.0000000	4.3913043
## [5]	{fins=TRUE}	=> {legs=FALSE}	0.1584158	0.9411765	4.1329923
## [6]	{breathes=FALSE}	=> {fins=TRUE}	0.1287129	0.6190476	3.6778711
## [7]	{backbone=FALSE}	=> {tail=FALSE}	0.1683168	0.9444444	3.6688034
## [8]	{type=bird}	=> {airborne=TRUE}	0.1584158	0.8000000	3.3666667
## [9]	{feathers=TRUE}	=> {airborne=TRUE}	0.1584158	0.8000000	3.3666667
## [10]	{breathes=FALSE}	=> {legs=FALSE}	0.1584158	0.7619048	3.3457557
## [11]	{type=fish}	=> {aquatic=TRUE}	0.1287129	1.0000000	2.8055556
## [12]	{fins=TRUE}	=> {aquatic=TRUE}	0.1683168	1.0000000	2.8055556
## [13]	{breathes=FALSE}	=> {aquatic=TRUE}	0.1980198	0.9523810	2.6719577
## [14]	{toothed=FALSE}	=> {backbone=FALSE}	0.1782178	0.4500000	2.5250000
## [15]	{type=bird}	=> {toothed=FALSE}	0.1980198	1.0000000	2.5250000
## [16]	{feathers=TRUE}	=> {toothed=FALSE}	0.1980198	1.0000000	2.5250000
## [17]	{milk=TRUE}	=> {type=mammal}	0.4059406	1.0000000	2.4634146
## [18]	{milk=TRUE}	=> {eggs=FALSE}	0.3960396	0.9756098	2.3461092
## [19]	{type=mammal}	=> {eggs=FALSE}	0.3960396	0.9756098	2.3461092
## [20]	{toothed=FALSE}	=> {airborne=TRUE}	0.2178218	0.5500000	2.3145833
## [21]	{milk=TRUE}	=> {hair=TRUE}	0.3861386	0.9512195	2.2342598
## [22]	{type=mammal}	=> {hair=TRUE}	0.3861386	0.9512195	2.2342598
## [23]	{legs=FALSE}	=> {aquatic=TRUE}	0.1782178	0.7826087	2.1956522
## [24]	{eggs=FALSE}	=> {hair=TRUE}	0.3762376	0.9047619	2.1251384
## [25]	{domestic=TRUE}	=> {predator=FALSE}	0.1089109	0.8461538	1.8991453
## [26]	{milk=TRUE}	=> {catsize=TRUE}	0.3168317	0.7804878	1.7915743
## [27]	{type=mammal}	=> {catsize=TRUE}	0.3168317	0.7804878	1.7915743
## [28]	{hair=FALSE}	=> {type=bird}	0.1980198	0.3448276	1.7413793
## [29]	{hair=FALSE}	=> {feathers=TRUE}	0.1980198	0.3448276	1.7413793
## [30]	{type=fish}	=> {hair=FALSE}	0.1287129	1.0000000	1.7413793
## [31]	{breathes=FALSE}	=> {hair=FALSE}	0.2079208	1.0000000	1.7413793
## [32]	{type=fish}	=> {eggs=TRUE}	0.1287129	1.0000000	1.7118644
## [33]	{type=bird}	=> {eggs=TRUE}	0.1980198	1.0000000	1.7118644
## [34]	{feathers=TRUE}	=> {eggs=TRUE}	0.1980198	1.0000000	1.7118644
## [35]	{eggs=FALSE}	=> {catsize=TRUE}	0.3069307	0.7380952	1.6942641
## [36]	{type=fish}	=> {milk=FALSE}	0.1287129	1.0000000	1.6833333
## [37]	{backbone=FALSE}	=> {milk=FALSE}	0.1782178	1.0000000	1.6833333
## [38]	{type=bird}	=> {milk=FALSE}	0.1980198	1.0000000	1.6833333
## [39]	{feathers=TRUE}	=> {milk=FALSE}	0.1980198	1.0000000	1.6833333
## [40]	{breathes=FALSE}	=> {milk=FALSE}	0.2079208	1.0000000	1.6833333
## [41]	{backbone=FALSE}	=> {catsize=FALSE}	0.1683168	0.9444444	1.6734893
## [42]	{toothed=FALSE}	=> {eggs=TRUE}	0.3861386	0.9750000	1.6690678
## [43]	{legs=FALSE}	=> {hair=FALSE}	0.2178218	0.9565217	1.6656672
## [44]	{type=fish}	=> {toothed=TRUE}	0.1287129	1.0000000	1.6557377
## [45]	{fins=TRUE}	=> {toothed=TRUE}	0.1683168	1.0000000	1.6557377
## [46]	{eggs=TRUE}	=> {milk=FALSE}	0.5742574	0.9830508	1.6548023
## [47]	{tail=FALSE}	=> {toothed=FALSE}	0.1683168	0.6538462	1.6509615
## [48]	{milk=FALSE}	=> {toothed=FALSE}	0.3861386	0.6500000	1.6412500

## [49]	{breathes=FALSE}	=>	{eggs=TRUE}	0.1980198	0.9523810	1.6303471
## [50]	{hair=FALSE}	=>	{milk=FALSE}	0.5544554	0.9655172	1.6252874
## [51]	{eggs=TRUE}	=>	{backbone=FALSE}	0.1683168	0.2881356	1.6167608
## [52]	{eggs=FALSE}	=>	{toothed=TRUE}	0.4059406	0.9761905	1.6163154
## [53]	{toothed=TRUE}	=>	{milk=TRUE}	0.3960396	0.6557377	1.6153539
## [54]	{toothed=TRUE}	=>	{type=mammal}	0.3960396	0.6557377	1.6153539
## [55]	{hair=TRUE}	=>	{catsize=TRUE}	0.2970297	0.6976744	1.6014799
## [56]	{hair=FALSE}	=>	{eggs=TRUE}	0.5346535	0.9310345	1.5938048
## [57]	{airborne=TRUE}	=>	{predator=FALSE}	0.1683168	0.7083333	1.5898148
## [58]	{airborne=TRUE}	=>	{eggs=TRUE}	0.2178218	0.9166667	1.5692090
## [59]	{airborne=TRUE}	=>	{catsize=FALSE}	0.2079208	0.8750000	1.5504386
## [60]	{aquatic=TRUE}	=>	{hair=FALSE}	0.3168317	0.8888889	1.5478927
## [61]	{airborne=TRUE}	=>	{milk=FALSE}	0.2178218	0.9166667	1.5430556
## [62]	{hair=FALSE}	=>	{fins=TRUE}	0.1485149	0.2586207	1.5365112
## [63]	{toothed=FALSE}	=>	{hair=FALSE}	0.3465347	0.8750000	1.5237069
## [64]	{legs=FALSE}	=>	{milk=FALSE}	0.1980198	0.8695652	1.4637681
## [65]	{toothed=TRUE}	=>	{hair=TRUE}	0.3762376	0.6229508	1.4632101
## [66]	{breathes=FALSE}	=>	{predator=TRUE}	0.1683168	0.8095238	1.4600340
## [67]	{aquatic=TRUE}	=>	{predator=TRUE}	0.2871287	0.8055556	1.4528770
## [68]	{domestic=TRUE}	=>	{aquatic=FALSE}	0.1188119	0.9230769	1.4343195
## [69]	{aquatic=TRUE}	=>	{eggs=TRUE}	0.2970297	0.8333333	1.4265537
## [70]	{milk=FALSE}	=>	{catsize=FALSE}	0.4752475	0.8000000	1.4175439
## [71]	{legs=FALSE}	=>	{eggs=TRUE}	0.1881188	0.8260870	1.4141489
## [72]	{hair=TRUE}	=>	{aquatic=FALSE}	0.3861386	0.9069767	1.4093023
## [73]	{aquatic=TRUE}	=>	{milk=FALSE}	0.2970297	0.8333333	1.4027778
## [74]	{eggs=TRUE}	=>	{catsize=FALSE}	0.4554455	0.7796610	1.3815046
## [75]	{fins=TRUE}	=>	{predator=TRUE}	0.1287129	0.7647059	1.3792017
## [76]	{catsize=FALSE}	=>	{toothed=FALSE}	0.3069307	0.5438596	1.3732456
## [77]	{legs=FALSE}	=>	{toothed=TRUE}	0.1881188	0.8260870	1.3677833
## [78]	{tail=FALSE}	=>	{catsize=FALSE}	0.1980198	0.7692308	1.3630229
## [79]	{backbone=FALSE}	=>	{hair=FALSE}	0.1386139	0.7777778	1.3544061
## [80]	{breathes=FALSE}	=>	{catsize=FALSE}	0.1584158	0.7619048	1.3500418
## [81]	{type=fish}	=>	{tail=TRUE}	0.1287129	1.0000000	1.3466667
## [82]	{type=bird}	=>	{tail=TRUE}	0.1980198	1.0000000	1.3466667
## [83]	{feathers=TRUE}	=>	{tail=TRUE}	0.1980198	1.0000000	1.3466667
## [84]	{catsize=FALSE}	=>	{hair=FALSE}	0.4356436	0.7719298	1.3442226
## [85]	{predator=TRUE}	=>	{legs=FALSE}	0.1683168	0.3035714	1.3330745
## [86]	{eggs=FALSE}	=>	{aquatic=FALSE}	0.3564356	0.8571429	1.3318681
## [87]	{milk=TRUE}	=>	{aquatic=FALSE}	0.3465347	0.8536585	1.3264540
## [88]	{type=mammal}	=>	{aquatic=FALSE}	0.3465347	0.8536585	1.3264540
## [89]	{catsize=TRUE}	=>	{toothed=TRUE}	0.3465347	0.7954545	1.3170641
## [90]	{tail=FALSE}	=>	{eggs=TRUE}	0.1980198	0.7692308	1.3168188
## [91]	{predator=FALSE}	=>	{aquatic=FALSE}	0.3762376	0.8444444	1.3121368
## [92]	{type=fish}	=>	{airborne=FALSE}	0.1287129	1.0000000	1.3116883
## [93]	{fins=TRUE}	=>	{airborne=FALSE}	0.1683168	1.0000000	1.3116883
## [94]	{breathes=FALSE}	=>	{airborne=FALSE}	0.2079208	1.0000000	1.3116883
## [95]	{legs=FALSE}	=>	{airborne=FALSE}	0.2277228	1.0000000	1.3116883
## [96]	{fins=TRUE}	=>	{eggs=TRUE}	0.1287129	0.7647059	1.3090728
## [97]	{airborne=TRUE}	=>	{hair=FALSE}	0.1782178	0.7500000	1.3060345
## [98]	{type=bird}	=>	{legs=TRUE}	0.1980198	1.0000000	1.2948718
## [99]	{feathers=TRUE}	=>	{legs=TRUE}	0.1980198	1.0000000	1.2948718
## [100]	{airborne=TRUE}	=>	{legs=TRUE}	0.2376238	1.0000000	1.2948718
## [101]	{tail=FALSE}	=>	{milk=FALSE}	0.1980198	0.7692308	1.2948718
## [102]	{fins=TRUE}	=>	{milk=FALSE}	0.1287129	0.7647059	1.2872549


```

## [103] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [104] {fins=TRUE}       => {tail=TRUE}      0.1584158 0.9411765 1.2674510
## [105] {hair=TRUE}       => {legs=TRUE}      0.4158416 0.9767442 1.2647585
## [106] {type=bird}       => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [107] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [108] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [109] {milk=TRUE}       => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [110] {type=mammal}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [111] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [112] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [113] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [114] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [115] {feathers=FALSE}  => {milk=TRUE}      0.4059406 0.5061728 1.2469136
## [116] {feathers=FALSE}  => {type=mammal}    0.4059406 0.5061728 1.2469136
## [117] {feathers=FALSE}  => {toothed=TRUE}   0.6039604 0.7530864 1.2469136
## [118] {type=fish}       => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [119] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [120] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [121] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [122] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [123] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [124] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [125] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [126] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [127] {type=bird}       => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [128] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [129] {type=bird}       => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [130] {feathers=TRUE}   => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [131] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [132] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [133] {aquatic=FALSE}   => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [134] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [135] {type=fish}       => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [136] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [137] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [138] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [139] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [140] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [141] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [142] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [143] {backbone=FALSE} => {fins=FALSE}     0.1782178 1.0000000 1.2023810
## [144] {type=bird}       => {fins=FALSE}     0.1980198 1.0000000 1.2023810
## [145] {feathers=TRUE}   => {fins=FALSE}     0.1980198 1.0000000 1.2023810
## [146] {airborne=TRUE}   => {fins=FALSE}     0.2376238 1.0000000 1.2023810
## [147] {toothed=FALSE}   => {fins=FALSE}     0.3960396 1.0000000 1.2023810
## [148] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [149] {predator=FALSE}  => {hair=TRUE}      0.2277228 0.5111111 1.2005168
## [150] {milk=TRUE}       => {legs=TRUE}      0.3762376 0.9268293 1.2001251
## [151] {type=mammal}     => {legs=TRUE}      0.3762376 0.9268293 1.2001251
## [152] {domestic=TRUE}   => {legs=TRUE}      0.1188119 0.9230769 1.1952663
## [153] {aquatic=FALSE}   => {legs=TRUE}      0.5940594 0.9230769 1.1952663
## [154] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [155] {backbone=TRUE}   => {eggs=FALSE}     0.4059406 0.4939759 1.1878944
## [156] {legs=TRUE}       => {fins=FALSE}     0.7623762 0.9871795 1.1869658

```

```

## [157] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [158] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [159] {toothed=FALSE} => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [160] {eggs=FALSE}     => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [161] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [162] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [163] {catsize=TRUE}   => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [164] {fins=FALSE}     => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [165] {eggs=FALSE}     => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [166] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [167] {milk=TRUE}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [168] {type=mammal}    => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [169] {tail=TRUE}      => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [170] {catsize=TRUE}   => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [171] {predator=TRUE}  => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [172] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [173] {breathes=TRUE}  => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [174] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [175] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [176] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [177] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [178] {domestic=TRUE}  => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [179] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [180] {predator=TRUE}  => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [181] {catsize=TRUE}   => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [182] {aquatic=TRUE}   => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [183] {domestic=TRUE}  => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [184] {predator=TRUE}  => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [185] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [186] {backbone=TRUE}  => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [187] {legs=FALSE}     => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [188] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [189] {aquatic=FALSE}  => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [190] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [191] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [192] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [193] {eggs=FALSE}     => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [194] {aquatic=FALSE}  => {type=bird} 0.1386139 0.2153846 1.0876923
## [195] {aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [196] {venomous=FALSE} => {type=bird} 0.1980198 0.2150538 1.0860215
## [197] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [198] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [199] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [200] {milk=TRUE}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [201] {type=mammal}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [202] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [203] {fins=TRUE}      => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [204] {catsize=TRUE}   => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [205] {tail=FALSE}     => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [206] {hair=FALSE}     => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [207] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [208] {type=fish}      => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [209] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [210] {legs=FALSE}     => {tail=TRUE} 0.1782178 0.7826087 1.0539130

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## [211] {milk=FALSE}      => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [212] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [213] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [214] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [215] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [216] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [217] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [218] {milk=TRUE}       => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [219] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [220] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [221] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [222] {aquatic=FALSE}   => {backbone=FALSE} 0.1188119 0.1846154 1.0358974
## [223] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [224] {hair=TRUE}       => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [225] {eggs=FALSE}      => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [226] {backbone=TRUE}   => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [227] {hair=TRUE}       => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [228] {toothed=FALSE}   => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [229] {legs=TRUE}       => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [230] {tail=TRUE}       => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [231] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [232] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [233] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [234] {predator=TRUE}   => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [235] {backbone=TRUE}   => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [236] {aquatic=FALSE}   => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [237] {breathes=TRUE}   => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [238] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [239] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [240] {aquatic=FALSE}   => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [241] {toothed=TRUE}    => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [242] {backbone=TRUE}   => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [243] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [244] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [245] {airborne=TRUE}   => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [246] {predator=TRUE}   => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [247] {tail=FALSE}      => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [248] {predator=TRUE}   => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [249] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [250] {catsize=FALSE}   => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [251] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [252] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [253] {domestic=TRUE}   => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [254] {type=fish}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [255] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [256] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [257] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [258] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [259] {venomous=FALSE} => {airborne=TRUE} 0.2178218 0.2365591 0.9955197
## [260] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [261] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [262] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [263] {catsize=TRUE}    => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [264] {eggs=TRUE}       => {predator=FALSE} 0.2574257 0.4406780 0.9890772

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## [265] {eggs=FALSE}      => {predator=TRUE}  0.2277228 0.5476190 0.9876701
## [266] {predator=FALSE} => {tail=TRUE}    0.3267327 0.7333333 0.9875556
## [267] {tail=TRUE}      => {legs=TRUE}    0.5643564 0.7600000 0.9841026
## [268] {catsize=TRUE}   => {fins=FALSE}   0.3564356 0.8181818 0.9837662
## [269] {domestic=FALSE} => {fins=FALSE}   0.7128713 0.8181818 0.9837662
## [270] {backbone=TRUE}  => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [271] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [272] {domestic=FALSE} => {toothed=TRUE}  0.5148515 0.5909091 0.9783905
## [273] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [274] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [275] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [276] {domestic=FALSE} => {type=bird}    0.1683168 0.1931818 0.9755682
## [277] {domestic=FALSE} => {feathers=TRUE}  0.1683168 0.1931818 0.9755682
## [278] {domestic=FALSE} => {breathes=TRUE}  0.6732673 0.7727273 0.9755682
## [279] {hair=FALSE}     => {tail=TRUE}    0.4158416 0.7241379 0.9751724
## [280] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [281] {predator=FALSE} => {backbone=TRUE}  0.3564356 0.8000000 0.9734940
## [282] {breathes=TRUE}  => {toothed=TRUE}  0.4653465 0.5875000 0.9727459
## [283] {tail=TRUE}      => {aquatic=TRUE}  0.2574257 0.3466667 0.9725926
## [284] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [285] {legs=TRUE}      => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [286] {predator=TRUE}  => {tail=FALSE}   0.1386139 0.2500000 0.9711538
## [287] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [288] {toothed=TRUE}   => {aquatic=FALSE}  0.3762376 0.6229508 0.9679697
## [289] {predator=TRUE}  => {milk=TRUE}     0.2178218 0.3928571 0.9677700
## [290] {predator=TRUE}  => {type=mammal}   0.2178218 0.3928571 0.9677700
## [291] {venomous=FALSE} => {aquatic=TRUE}  0.3168317 0.3440860 0.9653524
## [292] {airborne=TRUE}  => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [293] {tail=FALSE}     => {aquatic=FALSE}  0.1584158 0.6153846 0.9562130
## [294] {backbone=TRUE}  => {fins=FALSE}   0.6534653 0.7951807 0.9561102
## [295] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [296] {feathers=FALSE} => {fins=FALSE}   0.6336634 0.7901235 0.9500294
## [297] {feathers=FALSE} => {backbone=TRUE}  0.6237624 0.7777778 0.9464525
## [298] {tail=TRUE}      => {fins=FALSE}   0.5841584 0.7866667 0.9458730
## [299] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [300] {fins=FALSE}     => {milk=FALSE}   0.4653465 0.5595238 0.9418651
## [301] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [302] {catsize=FALSE}  => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [303] {eggs=TRUE}      => {fins=FALSE}   0.4554455 0.7796610 0.9374496
## [304] {airborne=FALSE} => {fins=FALSE}   0.5940594 0.7792208 0.9369202
## [305] {domestic=FALSE} => {aquatic=FALSE}  0.5247525 0.6022727 0.9358392
## [306] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [307] {catsize=FALSE}  => {legs=TRUE}    0.4059406 0.7192982 0.9313990
## [308] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [309] {eggs=FALSE}     => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [310] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [311] {legs=TRUE}      => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [312] {catsize=FALSE}  => {aquatic=FALSE}  0.3366337 0.5964912 0.9268556
## [313] {milk=TRUE}      => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [314] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [315] {predator=TRUE}  => {fins=FALSE}   0.4257426 0.7678571 0.9232568
## [316] {backbone=TRUE}  => {hair=FALSE}   0.4356436 0.5301205 0.9231408
## [317] {tail=FALSE}     => {breathes=TRUE}  0.1881188 0.7307692 0.9225962
## [318] {venomous=FALSE} => {tail=FALSE}   0.2178218 0.2365591 0.9189413

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## [319] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [320] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [321] {airborne=TRUE} => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
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## [323] {catsize=FALSE} => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [324] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [325] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636 0.9075053
## [326] {hair=FALSE} => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [327] {legs=TRUE} => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [328] {tail=TRUE} => {breathes=FALSE} 0.1386139 0.1866667 0.8977778
## [329] {tail=TRUE} => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [330] {legs=FALSE} => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [331] {toothed=TRUE} => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [332] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
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## [334] {predator=TRUE} => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [335] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [336] {predator=TRUE} => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [337] {eggs=TRUE} => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [338] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
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## [340] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [341] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
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## [344] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964
## [345] {catsize=FALSE} => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [346] {backbone=TRUE} => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [347] {hair=FALSE} => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [348] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [349] {hair=TRUE} => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [350] {eggs=TRUE} => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [351] {milk=FALSE} => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [352] {milk=FALSE} => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [353] {aquatic=TRUE} => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [354] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [355] {eggs=TRUE} => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [356] {eggs=TRUE} => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [357] {milk=FALSE} => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [358] {hair=FALSE} => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [359] {catsize=TRUE} => {predator=FALSE} 0.1584158 0.3636364 0.8161616
## [360] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [361] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [362] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [363] {legs=TRUE} => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [364] {aquatic=FALSE} => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [365] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000 0.7743333
## [366] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
## [367] {eggs=TRUE} => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
## [368] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [369] {aquatic=FALSE} => {predator=TRUE} 0.2673267 0.4153846 0.7491758
## [370] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
## [371] {toothed=FALSE} => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
## [372] {hair=FALSE} => {toothed=TRUE} 0.2277228 0.3965517 0.6565856

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## [373] {aquatic=TRUE}    => {legs=TRUE}      0.1782178 0.5000000 0.6474359
## [374] {aquatic=TRUE}    => {fins=FALSE}     0.1881188 0.5277778 0.6345899
## [375] {toothed=FALSE}    => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
## [376] {toothed=FALSE}    => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
## [377] {toothed=TRUE}     => {milk=FALSE}     0.2079208 0.3442623 0.5795082
## [378] {eggs=TRUE}        => {toothed=TRUE}   0.1980198 0.3389831 0.5612670
## [379] {breathes=TRUE}    => {aquatic=TRUE}   0.1584158 0.2000000 0.5611111
## [380] {hair=FALSE}       => {catsize=TRUE}   0.1386139 0.2413793 0.5540752
## [381] {hair=TRUE}        => {catsize=FALSE}  0.1287129 0.3023256 0.5356997
## [382] {catsize=TRUE}     => {eggs=TRUE}      0.1287129 0.2954545 0.5057781
## [383] {eggs=FALSE}       => {catsize=FALSE}  0.1089109 0.2619048 0.4640769
## [384] {milk=FALSE}       => {catsize=TRUE}   0.1188119 0.2000000 0.4590909
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE}                    => {fins=FALSE} 0.1782178 1.0000000
## [2] {type=bird}                          => {fins=FALSE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                      => {fins=FALSE} 0.1980198 1.0000000
## [4] {airborne=TRUE}                      => {fins=FALSE} 0.2376238 1.0000000
## [5] {toothed=FALSE}                      => {fins=FALSE} 0.3960396 1.0000000
## [6] {predator=FALSE,tail=FALSE}          => {fins=FALSE} 0.1188119 1.0000000
## [7] {legs=TRUE,tail=FALSE}               => {fins=FALSE} 0.2079208 1.0000000
## [8] {milk=TRUE,predator=FALSE}           => {fins=FALSE} 0.1881188 1.0000000
## [9] {predator=FALSE,type=mammal}         => {fins=FALSE} 0.1881188 1.0000000
## [10] {eggs=FALSE,predator=FALSE}          => {fins=FALSE} 0.1881188 1.0000000
## [11] {eggs=FALSE,catsize=FALSE}           => {fins=FALSE} 0.1089109 1.0000000
## [12] {hair=TRUE,catsize=FALSE}            => {fins=FALSE} 0.1287129 1.0000000
## [13] {predator=FALSE,catsize=TRUE}        => {fins=FALSE} 0.1584158 1.0000000
## [14] {legs=TRUE,catsize=FALSE}            => {fins=FALSE} 0.4059406 1.0000000
## [15] {breathes=TRUE,catsize=FALSE}        => {fins=FALSE} 0.4059406 1.0000000
## [16] {hair=FALSE,legs=TRUE}               => {fins=FALSE} 0.3564356 1.0000000
## [17] {eggs=TRUE,legs=TRUE}               => {fins=FALSE} 0.3960396 1.0000000
## [18] {eggs=TRUE,breathes=TRUE}           => {fins=FALSE} 0.3861386 1.0000000
## [19] {milk=FALSE,legs=TRUE}               => {fins=FALSE} 0.3960396 1.0000000
## [20] {milk=FALSE,breathes=TRUE}          => {fins=FALSE} 0.3861386 1.0000000
## [21] {legs=TRUE}                         => {fins=FALSE} 0.7623762 0.9871795
## [22] {hair=TRUE}                        => {fins=FALSE} 0.4059406 0.9534884
## [23] {breathes=TRUE}                    => {fins=FALSE} 0.7524752 0.9500000
## [24] {domestic=TRUE}                    => {fins=FALSE} 0.1188119 0.9230769
## [25] {predator=FALSE,domestic=FALSE}     => {fins=FALSE} 0.3069307 0.9117647
## [26] {predator=FALSE}                   => {fins=FALSE} 0.4059406 0.9111111
## [27] {eggs=FALSE}                       => {fins=FALSE} 0.3762376 0.9047619
## [28] {milk=TRUE}                        => {fins=FALSE} 0.3663366 0.9024390
## [29] {type=mammal}                      => {fins=FALSE} 0.3663366 0.9024390
## [30] {catsize=FALSE}                    => {fins=FALSE} 0.4752475 0.8421053
## [31] {venomous=FALSE}                   => {fins=FALSE} 0.7623762 0.8279570
## [32] {catsize=TRUE}                     => {fins=FALSE} 0.3564356 0.8181818
## [33] {domestic=FALSE}                   => {fins=FALSE} 0.7128713 0.8181818
## [34] {backbone=TRUE}                    => {fins=FALSE} 0.6534653 0.7951807
## [35] {feathers=FALSE}                   => {fins=FALSE} 0.6336634 0.7901235
## [36] {tail=TRUE}                       => {fins=FALSE} 0.5841584 0.7866667
## [37] {eggs=TRUE}                       => {fins=FALSE} 0.4554455 0.7796610
## [38] {airborne=FALSE}                   => {fins=FALSE} 0.5940594 0.7792208
## [39] {predator=TRUE}                     => {fins=FALSE} 0.4257426 0.7678571
## [40] {hair=FALSE}                       => {fins=FALSE} 0.4257426 0.7413793

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## [41] {toothed=TRUE}                => {fins=FALSE} 0.4356436 0.7213115
## [42] {aquatic=TRUE}                 => {fins=FALSE} 0.1881188 0.5277778
## lift
## [1] 1.2023810
## [2] 1.2023810
## [3] 1.2023810
## [4] 1.2023810
## [5] 1.2023810
## [6] 1.2023810
## [7] 1.2023810
## [8] 1.2023810
## [9] 1.2023810
## [10] 1.2023810
## [11] 1.2023810
## [12] 1.2023810
## [13] 1.2023810
## [14] 1.2023810
## [15] 1.2023810
## [16] 1.2023810
## [17] 1.2023810
## [18] 1.2023810
## [19] 1.2023810
## [20] 1.2023810
## [21] 1.1869658
## [22] 1.1464563
## [23] 1.1422619
## [24] 1.1098901
## [25] 1.0962885
## [26] 1.0955026
## [27] 1.0878685
## [28] 1.0850755
## [29] 1.0850755
## [30] 1.0125313
## [31] 0.9955197
## [32] 0.9837662
## [33] 0.9837662
## [34] 0.9561102
## [35] 0.9500294
## [36] 0.9458730
## [37] 0.9374496
## [38] 0.9369202
## [39] 0.9232568
## [40] 0.8914204
## [41] 0.8672912
## [42] 0.6345899
## lhs rhs support confidence lift
## [1] {type=fish} => {fins=TRUE} 0.1287129 1.0000000 5.941176
## [2] {breathes=FALSE} => {fins=TRUE} 0.1287129 0.6190476 3.677871
## [3] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207 1.536511
## lhs rhs support confidence lift
## [1] {hair=FALSE,legs=TRUE} => {fins=FALSE} 0.3564356 1 1.202381
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {feathers=FALSE} 0.1287129

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## [2] {fins=TRUE} => {feathers=FALSE} 0.1683168
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208
## [5] {legs=FALSE} => {feathers=FALSE} 0.2277228
## [6] {tail=FALSE} => {feathers=FALSE} 0.2574257
## [7] {eggs=FALSE} => {feathers=FALSE} 0.4158416
## [8] {hair=TRUE} => {feathers=FALSE} 0.4257426
## [9] {airborne=FALSE,catsize=FALSE} => {feathers=FALSE} 0.3465347
## [10] {airborne=FALSE,predator=FALSE} => {feathers=FALSE} 0.2673267
## [11] {airborne=FALSE} => {feathers=FALSE} 0.7227723
## [12] {catsize=TRUE} => {feathers=FALSE} 0.3762376
## [13] {predator=TRUE} => {feathers=FALSE} 0.4653465
## [14] {aquatic=TRUE} => {feathers=FALSE} 0.2970297
## [15] {aquatic=FALSE} => {feathers=FALSE} 0.5049505
## [16] {predator=FALSE} => {feathers=FALSE} 0.3366337
## [17] {catsize=FALSE} => {feathers=FALSE} 0.4257426
## [18] {breathes=TRUE} => {feathers=FALSE} 0.5940594
## [19] {legs=TRUE} => {feathers=FALSE} 0.5742574
## [20] {milk=FALSE} => {feathers=FALSE} 0.3960396
## [21] {eggs=TRUE} => {feathers=FALSE} 0.3861386
## [22] {hair=FALSE} => {feathers=FALSE} 0.3762376
## [23] {toothed=FALSE} => {feathers=FALSE} 0.1980198
## confidence lift
## [1] 1.0000000 1.2469136
## [2] 1.0000000 1.2469136
## [3] 1.0000000 1.2469136
## [4] 1.0000000 1.2469136
## [5] 1.0000000 1.2469136
## [6] 1.0000000 1.2469136
## [7] 1.0000000 1.2469136
## [8] 1.0000000 1.2469136
## [9] 0.9722222 1.2122771
## [10] 0.9642857 1.2023810
## [11] 0.9480519 1.1821388
## [12] 0.8636364 1.0768799
## [13] 0.8392857 1.0465168
## [14] 0.8333333 1.0390947
## [15] 0.7846154 0.9783476
## [16] 0.7555556 0.9421125
## [17] 0.7543860 0.9406541
## [18] 0.7500000 0.9351852
## [19] 0.7435897 0.9271921
## [20] 0.6666667 0.8312757
## [21] 0.6610169 0.8242310
## [22] 0.6551724 0.8169434
## [23] 0.5000000 0.6234568
## lhs rhs support confidence lift
## [1] {type=bird} => {feathers=TRUE} 0.1980198 1.0000000 5.0500000
## [2] {hair=FALSE} => {feathers=TRUE} 0.1980198 0.3448276 1.7413793
## [3] {aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [4] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [5] {domestic=FALSE} => {feathers=TRUE} 0.1683168 0.1931818 0.9755682
## [1] "Número de reglas con consecuente negado"
## lhs rhs support

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## [1] {type=bird} => {breathes=TRUE} 0.1980198
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238
## [4] {milk=TRUE} => {breathes=TRUE} 0.4059406
## [5] {type=mammal} => {breathes=TRUE} 0.4059406
## [6] {hair=TRUE} => {breathes=TRUE} 0.4257426
## [7] {fins=FALSE,domestic=TRUE} => {breathes=TRUE} 0.1188119
## [8] {toothed=FALSE,tail=TRUE} => {breathes=TRUE} 0.2277228
## [9] {toothed=FALSE,backbone=TRUE} => {breathes=TRUE} 0.2178218
## [10] {eggs=FALSE,predator=FALSE} => {breathes=TRUE} 0.1881188
## [11] {eggs=FALSE,legs=TRUE} => {breathes=TRUE} 0.3762376
## [12] {predator=FALSE,catsize=TRUE} => {breathes=TRUE} 0.1584158
## [13] {aquatic=FALSE,catsize=TRUE} => {breathes=TRUE} 0.3069307
## [14] {predator=FALSE,legs=TRUE} => {breathes=TRUE} 0.3861386
## [15] {predator=FALSE,fins=FALSE} => {breathes=TRUE} 0.4059406
## [16] {aquatic=FALSE,toothed=TRUE} => {breathes=TRUE} 0.3762376
## [17] {toothed=TRUE,legs=TRUE} => {breathes=TRUE} 0.4158416
## [18] {aquatic=FALSE,tail=TRUE} => {breathes=TRUE} 0.4851485
## [19] {aquatic=FALSE,backbone=TRUE} => {breathes=TRUE} 0.5247525
## [20] {legs=TRUE,tail=TRUE} => {breathes=TRUE} 0.5643564
## [21] {backbone=TRUE,legs=TRUE} => {breathes=TRUE} 0.6336634
## [22] {backbone=TRUE,fins=FALSE} => {breathes=TRUE} 0.6435644
## [23] {aquatic=FALSE} => {breathes=TRUE} 0.6336634
## [24] {fins=FALSE,tail=TRUE} => {breathes=TRUE} 0.5742574
## [25] {toothed=TRUE,fins=FALSE} => {breathes=TRUE} 0.4257426
## [26] {eggs=FALSE} => {breathes=TRUE} 0.4059406
## [27] {legs=TRUE,catsize=TRUE} => {breathes=TRUE} 0.3564356
## [28] {fins=FALSE,catsize=TRUE} => {breathes=TRUE} 0.3465347
## [29] {legs=TRUE} => {breathes=TRUE} 0.7227723
## [30] {domestic=TRUE} => {breathes=TRUE} 0.1188119
## [31] {venomous=FALSE,fins=FALSE} => {breathes=TRUE} 0.7029703
## [32] {predator=FALSE,domestic=FALSE} => {breathes=TRUE} 0.3069307
## [33] {predator=FALSE} => {breathes=TRUE} 0.4059406
## [34] {catsize=TRUE} => {breathes=TRUE} 0.3861386
## [35] {toothed=FALSE,venomous=FALSE} => {breathes=TRUE} 0.2970297
## [36] {toothed=FALSE} => {breathes=TRUE} 0.3267327
## [37] {tail=TRUE} => {breathes=TRUE} 0.6039604
## [38] {domestic=FALSE} => {breathes=TRUE} 0.6732673
## [39] {tail=FALSE} => {breathes=TRUE} 0.1881188
## [40] {airborne=FALSE} => {breathes=TRUE} 0.5544554
## [41] {catsize=FALSE} => {breathes=TRUE} 0.4059406
## [42] {predator=TRUE} => {breathes=TRUE} 0.3861386
## [43] {eggs=TRUE} => {breathes=TRUE} 0.3861386
## [44] {milk=FALSE} => {breathes=TRUE} 0.3861386
## [45] {backbone=FALSE} => {breathes=TRUE} 0.1089109
## confidence lift
## [1] 1.0000000 1.2625000
## [2] 1.0000000 1.2625000
## [3] 1.0000000 1.2625000
## [4] 1.0000000 1.2625000
## [5] 1.0000000 1.2625000
## [6] 1.0000000 1.2625000
## [7] 1.0000000 1.2625000
## [8] 1.0000000 1.2625000

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## [9] 1.0000000 1.2625000
## [10] 1.0000000 1.2625000
## [11] 1.0000000 1.2625000
## [12] 1.0000000 1.2625000
## [13] 1.0000000 1.2625000
## [14] 1.0000000 1.2625000
## [15] 1.0000000 1.2625000
## [16] 1.0000000 1.2625000
## [17] 1.0000000 1.2625000
## [18] 1.0000000 1.2625000
## [19] 1.0000000 1.2625000
## [20] 1.0000000 1.2625000
## [21] 1.0000000 1.2625000
## [22] 0.9848485 1.2433712
## [23] 0.9846154 1.2430769
## [24] 0.9830508 1.2411017
## [25] 0.9772727 1.2338068
## [26] 0.9761905 1.2324405
## [27] 0.9729730 1.2283784
## [28] 0.9722222 1.2274306
## [29] 0.9358974 1.1815705
## [30] 0.9230769 1.1653846
## [31] 0.9220779 1.1641234
## [32] 0.9117647 1.1511029
## [33] 0.9111111 1.1502778
## [34] 0.8863636 1.1190341
## [35] 0.8333333 1.0520833
## [36] 0.8250000 1.0415625
## [37] 0.8133333 1.0268333
## [38] 0.7727273 0.9755682
## [39] 0.7307692 0.9225962
## [40] 0.7272727 0.9181818
## [41] 0.7192982 0.9081140
## [42] 0.6964286 0.8792411
## [43] 0.6610169 0.8345339
## [44] 0.6500000 0.8206250
## [45] 0.6111111 0.7715278
##      lhs                rhs      support  confidence lift
## [1] {type=fish} => {breathes=FALSE} 0.1287129 1.0000000 4.8095238
## [2] {tail=TRUE} => {breathes=FALSE} 0.1386139 0.1866667 0.8977778
##      lhs                rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {breathes=TRUE} 0.2277228 1.0000000
## [2] {aquatic=FALSE,tail=TRUE} => {breathes=TRUE} 0.4851485 1.0000000
## [3] {legs=TRUE,tail=TRUE}      => {breathes=TRUE} 0.5643564 1.0000000
## [4] {fins=FALSE,tail=TRUE}    => {breathes=TRUE} 0.5742574 0.9830508
##      lift
## [1] 1.262500
## [2] 1.262500
## [3] 1.262500
## [4] 1.241102
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000
## [2] {feathers=TRUE}       => {legs=TRUE} 0.1980198 1.0000000

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## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000
## [4] {breathes=TRUE,domestic=TRUE} => {legs=TRUE} 0.1188119 1.0000000
## [5] {fins=FALSE,domestic=TRUE} => {legs=TRUE} 0.1188119 1.0000000
## [6] {toothed=FALSE,tail=TRUE} => {legs=TRUE} 0.2277228 1.0000000
## [7] {toothed=FALSE,backbone=TRUE} => {legs=TRUE} 0.2178218 1.0000000
## [8] {milk=TRUE,predator=FALSE} => {legs=TRUE} 0.1881188 1.0000000
## [9] {milk=TRUE,fins=FALSE} => {legs=TRUE} 0.3663366 1.0000000
## [10] {predator=FALSE,type=mammal} => {legs=TRUE} 0.1881188 1.0000000
## [11] {fins=FALSE,type=mammal} => {legs=TRUE} 0.3663366 1.0000000
## [12] {eggs=FALSE,predator=FALSE} => {legs=TRUE} 0.1881188 1.0000000
## [13] {hair=TRUE,catsize=FALSE} => {legs=TRUE} 0.1287129 1.0000000
## [14] {hair=TRUE,fins=FALSE} => {legs=TRUE} 0.4059406 1.0000000
## [15] {predator=FALSE,catsize=TRUE} => {legs=TRUE} 0.1584158 1.0000000
## [16] {fins=FALSE,catsize=TRUE} => {legs=TRUE} 0.3564356 1.0000000
## [17] {hair=TRUE} => {legs=TRUE} 0.4158416 0.9767442
## [18] {eggs=FALSE,fins=FALSE} => {legs=TRUE} 0.3663366 0.9736842
## [19] {aquatic=FALSE,backbone=TRUE} => {legs=TRUE} 0.5049505 0.9622642
## [20] {backbone=TRUE,fins=FALSE} => {legs=TRUE} 0.6237624 0.9545455
## [21] {predator=FALSE,fins=FALSE} => {legs=TRUE} 0.3861386 0.9512195
## [22] {fins=FALSE,tail=TRUE} => {legs=TRUE} 0.5544554 0.9491525
## [23] {venomous=FALSE,fins=FALSE} => {legs=TRUE} 0.7227723 0.9480519
## [24] {breathes=TRUE,fins=FALSE} => {legs=TRUE} 0.7128713 0.9473684
## [25] {toothed=FALSE,breathes=TRUE} => {legs=TRUE} 0.3069307 0.9393939
## [26] {aquatic=FALSE,venomous=FALSE} => {legs=TRUE} 0.5643564 0.9344262
## [27] {toothed=TRUE,fins=FALSE} => {legs=TRUE} 0.4059406 0.9318182
## [28] {milk=TRUE} => {legs=TRUE} 0.3762376 0.9268293
## [29] {type=mammal} => {legs=TRUE} 0.3762376 0.9268293
## [30] {domestic=TRUE} => {legs=TRUE} 0.1188119 0.9230769
## [31] {aquatic=FALSE} => {legs=TRUE} 0.5940594 0.9230769
## [32] {breathes=TRUE,venomous=FALSE} => {legs=TRUE} 0.6831683 0.9200000
## [33] {toothed=FALSE,venomous=FALSE} => {legs=TRUE} 0.3267327 0.9166667
## [34] {eggs=FALSE} => {legs=TRUE} 0.3762376 0.9047619
## [35] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000
## [36] {predator=FALSE,backbone=TRUE} => {legs=TRUE} 0.3168317 0.8888889
## [37] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667
## [38] {catsize=TRUE} => {legs=TRUE} 0.3663366 0.8409091
## [39] {venomous=FALSE,tail=FALSE} => {legs=TRUE} 0.1782178 0.8181818
## [40] {tail=FALSE} => {legs=TRUE} 0.2079208 0.8076923
## [41] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778
## [42] {tail=TRUE} => {legs=TRUE} 0.5643564 0.7600000
## [43] {catsize=FALSE} => {legs=TRUE} 0.4059406 0.7192982
## [44] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987
## [45] {toothed=TRUE} => {legs=TRUE} 0.4158416 0.6885246
## [46] {eggs=TRUE} => {legs=TRUE} 0.3960396 0.6779661
## [47] {milk=FALSE} => {legs=TRUE} 0.3960396 0.6666667
## [48] {aquatic=TRUE} => {legs=TRUE} 0.1782178 0.5000000
## lift
## [1] 1.2948718
## [2] 1.2948718
## [3] 1.2948718
## [4] 1.2948718
## [5] 1.2948718
## [6] 1.2948718
## [7] 1.2948718

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## [8] 1.2948718
## [9] 1.2948718
## [10] 1.2948718
## [11] 1.2948718
## [12] 1.2948718
## [13] 1.2948718
## [14] 1.2948718
## [15] 1.2948718
## [16] 1.2948718
## [17] 1.2647585
## [18] 1.2607962
## [19] 1.2460087
## [20] 1.2360140
## [21] 1.2317073
## [22] 1.2290309
## [23] 1.2276057
## [24] 1.2267206
## [25] 1.2163947
## [26] 1.2099622
## [27] 1.2065851
## [28] 1.2001251
## [29] 1.2001251
## [30] 1.1952663
## [31] 1.1952663
## [32] 1.1912821
## [33] 1.1869658
## [34] 1.1715507
## [35] 1.1653846
## [36] 1.1509972
## [37] 1.1222222
## [38] 1.0888695
## [39] 1.0594406
## [40] 1.0458580
## [41] 1.0071225
## [42] 0.9841026
## [43] 0.9313990
## [44] 0.9080919
## [45] 0.8915511
## [46] 0.8778792
## [47] 0.8632479
## [48] 0.6474359

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {legs=FALSE} 0.1287129 1.0000000 4.391304
## [2] {fins=TRUE}     => {legs=FALSE} 0.1584158 0.9411765 4.132992
## [3] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048 3.345756
## [4] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714 1.333075
## [1] "Número de reglas con consecuente negado"

##      lhs      rhs      support  confidence
## [1] {type=bird}    => {legs=TRUE} 0.1980198 1.0000000
## [2] {feathers=TRUE}  => {legs=TRUE} 0.1980198 1.0000000
## [3] {airborne=TRUE}  => {legs=TRUE} 0.2376238 1.0000000
## [4] {breathes=TRUE,domestic=TRUE} => {legs=TRUE} 0.1188119 1.0000000
## [5] {fins=FALSE,domestic=TRUE}    => {legs=TRUE} 0.1188119 1.0000000
## [6] {toothed=FALSE,tail=TRUE}    => {legs=TRUE} 0.2277228 1.0000000

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## [7] {toothed=FALSE,backbone=TRUE} => {legs=TRUE} 0.2178218 1.0000000
## [8] {milk=TRUE,predator=FALSE} => {legs=TRUE} 0.1881188 1.0000000
## [9] {milk=TRUE,fins=FALSE} => {legs=TRUE} 0.3663366 1.0000000
## [10] {predator=FALSE,type=mammal} => {legs=TRUE} 0.1881188 1.0000000
## [11] {fins=FALSE,type=mammal} => {legs=TRUE} 0.3663366 1.0000000
## [12] {eggs=FALSE,predator=FALSE} => {legs=TRUE} 0.1881188 1.0000000
## [13] {hair=TRUE,catsize=FALSE} => {legs=TRUE} 0.1287129 1.0000000
## [14] {hair=TRUE,fins=FALSE} => {legs=TRUE} 0.4059406 1.0000000
## [15] {predator=FALSE,catsize=TRUE} => {legs=TRUE} 0.1584158 1.0000000
## [16] {fins=FALSE,catsize=TRUE} => {legs=TRUE} 0.3564356 1.0000000
## [17] {hair=TRUE} => {legs=TRUE} 0.4158416 0.9767442
## [18] {eggs=FALSE,fins=FALSE} => {legs=TRUE} 0.3663366 0.9736842
## [19] {aquatic=FALSE,backbone=TRUE} => {legs=TRUE} 0.5049505 0.9622642
## [20] {backbone=TRUE,fins=FALSE} => {legs=TRUE} 0.6237624 0.9545455
## [21] {predator=FALSE,fins=FALSE} => {legs=TRUE} 0.3861386 0.9512195
## [22] {fins=FALSE,tail=TRUE} => {legs=TRUE} 0.5544554 0.9491525
## [23] {venomous=FALSE,fins=FALSE} => {legs=TRUE} 0.7227723 0.9480519
## [24] {breathes=TRUE,fins=FALSE} => {legs=TRUE} 0.7128713 0.9473684
## [25] {toothed=FALSE,breathes=TRUE} => {legs=TRUE} 0.3069307 0.9393939
## [26] {aquatic=FALSE,venomous=FALSE} => {legs=TRUE} 0.5643564 0.9344262
## [27] {toothed=TRUE,fins=FALSE} => {legs=TRUE} 0.4059406 0.9318182
## [28] {milk=TRUE} => {legs=TRUE} 0.3762376 0.9268293
## [29] {type=mammal} => {legs=TRUE} 0.3762376 0.9268293
## [30] {domestic=TRUE} => {legs=TRUE} 0.1188119 0.9230769
## [31] {aquatic=FALSE} => {legs=TRUE} 0.5940594 0.9230769
## [32] {breathes=TRUE,venomous=FALSE} => {legs=TRUE} 0.6831683 0.9200000
## [33] {toothed=FALSE,venomous=FALSE} => {legs=TRUE} 0.3267327 0.9166667
## [34] {eggs=FALSE} => {legs=TRUE} 0.3762376 0.9047619
## [35] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000
## [36] {predator=FALSE,backbone=TRUE} => {legs=TRUE} 0.3168317 0.8888889
## [37] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667
## [38] {catsize=TRUE} => {legs=TRUE} 0.3663366 0.8409091
## [39] {venomous=FALSE,tail=FALSE} => {legs=TRUE} 0.1782178 0.8181818
## [40] {tail=FALSE} => {legs=TRUE} 0.2079208 0.8076923
## [41] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778
## [42] {tail=TRUE} => {legs=TRUE} 0.5643564 0.7600000
## [43] {catsize=FALSE} => {legs=TRUE} 0.4059406 0.7192982
## [44] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987
## [45] {toothed=TRUE} => {legs=TRUE} 0.4158416 0.6885246
## [46] {eggs=TRUE} => {legs=TRUE} 0.3960396 0.6779661
## [47] {milk=FALSE} => {legs=TRUE} 0.3960396 0.6666667
## [48] {aquatic=TRUE} => {legs=TRUE} 0.1782178 0.5000000
## lift
## [1] 1.2948718
## [2] 1.2948718
## [3] 1.2948718
## [4] 1.2948718
## [5] 1.2948718
## [6] 1.2948718
## [7] 1.2948718
## [8] 1.2948718
## [9] 1.2948718
## [10] 1.2948718
## [11] 1.2948718

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## [12] 1.2948718
## [13] 1.2948718
## [14] 1.2948718
## [15] 1.2948718
## [16] 1.2948718
## [17] 1.2647585
## [18] 1.2607962
## [19] 1.2460087
## [20] 1.2360140
## [21] 1.2317073
## [22] 1.2290309
## [23] 1.2276057
## [24] 1.2267206
## [25] 1.2163947
## [26] 1.2099622
## [27] 1.2065851
## [28] 1.2001251
## [29] 1.2001251
## [30] 1.1952663
## [31] 1.1952663
## [32] 1.1912821
## [33] 1.1869658
## [34] 1.1715507
## [35] 1.1653846
## [36] 1.1509972
## [37] 1.1222222
## [38] 1.0888695
## [39] 1.0594406
## [40] 1.0458580
## [41] 1.0071225
## [42] 0.9841026
## [43] 0.9313990
## [44] 0.9080919
## [45] 0.8915511
## [46] 0.8778792
## [47] 0.8632479
## [48] 0.6474359
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {legs=FALSE} 0.1287129 1.0000000 4.391304
## [2] {fins=TRUE}           => {legs=FALSE} 0.1584158 0.9411765 4.132992
## [3] {breathes=FALSE}     => {legs=FALSE} 0.1584158 0.7619048 3.345756
## [4] {predator=TRUE}      => {legs=FALSE} 0.1683168 0.3035714 1.333075
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence
## [1] {backbone=FALSE}     => {fins=FALSE} 0.1782178 1.0000000
## [2] {type=bird}            => {fins=FALSE} 0.1980198 1.0000000
## [3] {feathers=TRUE}         => {fins=FALSE} 0.1980198 1.0000000
## [4] {airborne=TRUE}        => {fins=FALSE} 0.2376238 1.0000000
## [5] {toothed=FALSE}         => {fins=FALSE} 0.3960396 1.0000000
## [6] {predator=FALSE,tail=FALSE} => {fins=FALSE} 0.1188119 1.0000000
## [7] {legs=TRUE,tail=FALSE}   => {fins=FALSE} 0.2079208 1.0000000
## [8] {milk=TRUE,predator=FALSE} => {fins=FALSE} 0.1881188 1.0000000
## [9] {predator=FALSE,type=mammal} => {fins=FALSE} 0.1881188 1.0000000
## [10] {eggs=FALSE,predator=FALSE} => {fins=FALSE} 0.1881188 1.0000000

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## [11] {eggs=FALSE,catsize=FALSE}    => {fins=FALSE} 0.1089109 1.0000000
## [12] {hair=TRUE,catsize=FALSE}      => {fins=FALSE} 0.1287129 1.0000000
## [13] {predator=FALSE,catsize=TRUE}  => {fins=FALSE} 0.1584158 1.0000000
## [14] {legs=TRUE,catsize=FALSE}      => {fins=FALSE} 0.4059406 1.0000000
## [15] {breathes=TRUE,catsize=FALSE}  => {fins=FALSE} 0.4059406 1.0000000
## [16] {hair=FALSE,legs=TRUE}         => {fins=FALSE} 0.3564356 1.0000000
## [17] {eggs=TRUE,legs=TRUE}          => {fins=FALSE} 0.3960396 1.0000000
## [18] {eggs=TRUE,breathes=TRUE}      => {fins=FALSE} 0.3861386 1.0000000
## [19] {milk=FALSE,legs=TRUE}         => {fins=FALSE} 0.3960396 1.0000000
## [20] {milk=FALSE,breathes=TRUE}     => {fins=FALSE} 0.3861386 1.0000000
## [21] {legs=TRUE}                   => {fins=FALSE} 0.7623762 0.9871795
## [22] {hair=TRUE}                   => {fins=FALSE} 0.4059406 0.9534884
## [23] {breathes=TRUE}               => {fins=FALSE} 0.7524752 0.9500000
## [24] {domestic=TRUE}               => {fins=FALSE} 0.1188119 0.9230769
## [25] {predator=FALSE,domestic=FALSE}=> {fins=FALSE} 0.3069307 0.9117647
## [26] {predator=FALSE}              => {fins=FALSE} 0.4059406 0.9111111
## [27] {eggs=FALSE}                  => {fins=FALSE} 0.3762376 0.9047619
## [28] {milk=TRUE}                   => {fins=FALSE} 0.3663366 0.9024390
## [29] {type=mammal}                 => {fins=FALSE} 0.3663366 0.9024390
## [30] {catsize=FALSE}               => {fins=FALSE} 0.4752475 0.8421053
## [31] {venomous=FALSE}              => {fins=FALSE} 0.7623762 0.8279570
## [32] {catsize=TRUE}                => {fins=FALSE} 0.3564356 0.8181818
## [33] {domestic=FALSE}              => {fins=FALSE} 0.7128713 0.8181818
## [34] {backbone=TRUE}               => {fins=FALSE} 0.6534653 0.7951807
## [35] {feathers=FALSE}              => {fins=FALSE} 0.6336634 0.7901235
## [36] {tail=TRUE}                   => {fins=FALSE} 0.5841584 0.7866667
## [37] {eggs=TRUE}                   => {fins=FALSE} 0.4554455 0.7796610
## [38] {airborne=FALSE}              => {fins=FALSE} 0.5940594 0.7792208
## [39] {predator=TRUE}               => {fins=FALSE} 0.4257426 0.7678571
## [40] {hair=FALSE}                  => {fins=FALSE} 0.4257426 0.7413793
## [41] {toothed=TRUE}                => {fins=FALSE} 0.4356436 0.7213115
## [42] {aquatic=TRUE}                => {fins=FALSE} 0.1881188 0.5277778
## lift
## [1] 1.2023810
## [2] 1.2023810
## [3] 1.2023810
## [4] 1.2023810
## [5] 1.2023810
## [6] 1.2023810
## [7] 1.2023810
## [8] 1.2023810
## [9] 1.2023810
## [10] 1.2023810
## [11] 1.2023810
## [12] 1.2023810
## [13] 1.2023810
## [14] 1.2023810
## [15] 1.2023810
## [16] 1.2023810
## [17] 1.2023810
## [18] 1.2023810
## [19] 1.2023810
## [20] 1.2023810
## [21] 1.1869658

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## [22] 1.1464563
## [23] 1.1422619
## [24] 1.1098901
## [25] 1.0962885
## [26] 1.0955026
## [27] 1.0878685
## [28] 1.0850755
## [29] 1.0850755
## [30] 1.0125313
## [31] 0.9955197
## [32] 0.9837662
## [33] 0.9837662
## [34] 0.9561102
## [35] 0.9500294
## [36] 0.9458730
## [37] 0.9374496
## [38] 0.9369202
## [39] 0.9232568
## [40] 0.8914204
## [41] 0.8672912
## [42] 0.6345899

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {fins=TRUE} 0.1287129 1.0000000 5.941176
## [2] {breathes=FALSE} => {fins=TRUE} 0.1287129 0.6190476 3.677871
## [3] {hair=FALSE}   => {fins=TRUE} 0.1485149 0.2586207 1.536511

##      lhs      rhs      support  confidence lift
## [1] {hair=FALSE,legs=TRUE} => {fins=FALSE} 0.3564356 1 1.202381
## [1] "Número de reglas con consecuente negado"

##      lhs      rhs      support  confidence
## [1] {type=fish}    => {tail=TRUE} 0.1287129 1.0000000
## [2] {type=bird}     => {tail=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}  => {tail=TRUE} 0.1980198 1.0000000
## [4] {backbone=TRUE,breathes=FALSE} => {tail=TRUE} 0.1386139 1.0000000
## [5] {airborne=TRUE,backbone=TRUE} => {tail=TRUE} 0.1782178 1.0000000
## [6] {toothed=FALSE,backbone=TRUE} => {tail=TRUE} 0.2178218 1.0000000
## [7] {backbone=TRUE,legs=FALSE} => {tail=TRUE} 0.1782178 0.9473684
## [8] {fins=TRUE}      => {tail=TRUE} 0.1584158 0.9411765
## [9] {predator=FALSE,catsize=TRUE} => {tail=TRUE} 0.1485149 0.9375000
## [10] {hair=FALSE,backbone=TRUE} => {tail=TRUE} 0.4059406 0.9318182
## [11] {hair=FALSE,catsize=TRUE} => {tail=TRUE} 0.1287129 0.9285714
## [12] {eggs=TRUE,backbone=TRUE} => {tail=TRUE} 0.3861386 0.9285714
## [13] {milk=FALSE,backbone=TRUE} => {tail=TRUE} 0.3861386 0.9285714
## [14] {eggs=TRUE,catsize=TRUE} => {tail=TRUE} 0.1188119 0.9230769
## [15] {milk=FALSE,catsize=TRUE} => {tail=TRUE} 0.1089109 0.9166667
## [16] {predator=FALSE,backbone=TRUE} => {tail=TRUE} 0.3267327 0.9166667
## [17] {aquatic=FALSE,backbone=TRUE} => {tail=TRUE} 0.4752475 0.9056604
## [18] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [19] {backbone=TRUE,catsize=FALSE} => {tail=TRUE} 0.3564356 0.9000000
## [20] {eggs=FALSE,domestic=FALSE} => {tail=TRUE} 0.2970297 0.8823529
## [21] {milk=TRUE,domestic=FALSE} => {tail=TRUE} 0.2871287 0.8787879
## [22] {domestic=FALSE,type=mammal} => {tail=TRUE} 0.2871287 0.8787879
## [23] {predator=FALSE,toothed=TRUE} => {tail=TRUE} 0.2079208 0.8750000
## [24] {hair=FALSE,toothed=TRUE} => {tail=TRUE} 0.1980198 0.8695652
## [25] {domestic=FALSE,catsize=TRUE} => {tail=TRUE} 0.3267327 0.8684211

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## [26] {aquatic=FALSE,toothed=TRUE}    => {tail=TRUE} 0.3267327 0.8684211
## [27] {toothed=TRUE,domestic=FALSE}    => {tail=TRUE} 0.4455446 0.8653846
## [28] {catsize=TRUE}                  => {tail=TRUE} 0.3762376 0.8636364
## [29] {toothed=TRUE,venomous=FALSE}    => {tail=TRUE} 0.4851485 0.8596491
## [30] {eggs=FALSE}                    => {tail=TRUE} 0.3564356 0.8571429
## [31] {milk=FALSE,toothed=TRUE}        => {tail=TRUE} 0.1782178 0.8571429
## [32] {milk=TRUE}                     => {tail=TRUE} 0.3465347 0.8536585
## [33] {type=mammal}                   => {tail=TRUE} 0.3465347 0.8536585
## [34] {predator=TRUE,breathes=TRUE}    => {tail=TRUE} 0.3168317 0.8205128
## [35] {airborne=TRUE,venomous=FALSE}    => {tail=TRUE} 0.1782178 0.8181818
## [36] {aquatic=FALSE,predator=TRUE}    => {tail=TRUE} 0.2178218 0.8148148
## [37] {hair=TRUE,predator=TRUE}        => {tail=TRUE} 0.1584158 0.8000000
## [38] {hair=TRUE,domestic=FALSE}       => {tail=TRUE} 0.2673267 0.7941176
## [39] {venomous=FALSE,legs=FALSE}      => {tail=TRUE} 0.1485149 0.7894737
## [40] {breathes=TRUE,venomous=FALSE}    => {tail=TRUE} 0.5841584 0.7866667
## [41] {legs=FALSE}                    => {tail=TRUE} 0.1782178 0.7826087
## [42] {airborne=FALSE,aquatic=FALSE}    => {tail=TRUE} 0.3564356 0.7826087
## [43] {airborne=FALSE,breathes=TRUE}    => {tail=TRUE} 0.4257426 0.7678571
## [44] {hair=TRUE}                     => {tail=TRUE} 0.3267327 0.7674419
## [45] {breathes=TRUE,domestic=FALSE}    => {tail=TRUE} 0.5148515 0.7647059
## [46] {aquatic=FALSE,domestic=FALSE}    => {tail=TRUE} 0.3960396 0.7547170
## [47] {aquatic=FALSE}                  => {tail=TRUE} 0.4851485 0.7538462
## [48] {airborne=TRUE}                  => {tail=TRUE} 0.1782178 0.7500000
## [49] {predator=TRUE}                  => {tail=TRUE} 0.4158416 0.7500000
## [50] {airborne=FALSE,predator=FALSE}    => {tail=TRUE} 0.2079208 0.7500000
## [51] {domestic=FALSE}                 => {tail=TRUE} 0.6435644 0.7386364
## [52] {predator=FALSE}                 => {tail=TRUE} 0.3267327 0.7333333
## [53] {hair=FALSE}                     => {tail=TRUE} 0.4158416 0.7241379
## [54] {feathers=FALSE}                 => {tail=TRUE} 0.5445545 0.6790123
## [55] {eggs=TRUE}                      => {tail=TRUE} 0.3861386 0.6610169
## [56] {catsize=FALSE}                  => {tail=TRUE} 0.3663366 0.6491228
## [57] {toothed=FALSE}                  => {tail=TRUE} 0.2277228 0.5750000
## lift
## [1] 1.3466667
## [2] 1.3466667
## [3] 1.3466667
## [4] 1.3466667
## [5] 1.3466667
## [6] 1.3466667
## [7] 1.2757895
## [8] 1.2674510
## [9] 1.2625000
## [10] 1.2548485
## [11] 1.2504762
## [12] 1.2504762
## [13] 1.2504762
## [14] 1.2430769
## [15] 1.2344444
## [16] 1.2344444
## [17] 1.2196226
## [18] 1.2138967
## [19] 1.2120000
## [20] 1.1882353
## [21] 1.1834343

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## [22] 1.1834343
## [23] 1.1783333
## [24] 1.1710145
## [25] 1.1694737
## [26] 1.1694737
## [27] 1.1653846
## [28] 1.1630303
## [29] 1.1576608
## [30] 1.1542857
## [31] 1.1542857
## [32] 1.1495935
## [33] 1.1495935
## [34] 1.1049573
## [35] 1.1018182
## [36] 1.0972840
## [37] 1.0773333
## [38] 1.0694118
## [39] 1.0631579
## [40] 1.0593778
## [41] 1.0539130
## [42] 1.0539130
## [43] 1.0340476
## [44] 1.0334884
## [45] 1.0298039
## [46] 1.0163522
## [47] 1.0151795
## [48] 1.0100000
## [49] 1.0100000
## [50] 1.0100000
## [51] 0.9946970
## [52] 0.9875556
## [53] 0.9751724
## [54] 0.9144033
## [55] 0.8901695
## [56] 0.8741520
## [57] 0.7743333
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444 3.6688034
## [2] {fins=FALSE}      => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [3] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [4] {predator=TRUE}  => {tail=FALSE} 0.1386139 0.2500000 0.9711538
## [5] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591 0.9189413
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [2] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [3] {milk=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2871287 0.8787879
## [4] {domestic=FALSE,type=mammal}    => {tail=TRUE} 0.2871287 0.8787879
## [5] {domestic=FALSE,catsize=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [6] {toothed=TRUE,domestic=FALSE}    => {tail=TRUE} 0.4455446 0.8653846
## [7] {hair=TRUE,domestic=FALSE}       => {tail=TRUE} 0.2673267 0.7941176
## [8] {breathes=TRUE,domestic=FALSE}   => {tail=TRUE} 0.5148515 0.7647059
## [9] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
##      lift
## [1] 1.213897

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## [2] 1.188235
## [3] 1.183434
## [4] 1.183434
## [5] 1.169474
## [6] 1.165385
## [7] 1.069412
## [8] 1.029804
## [9] 1.016352
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [2] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [3] {hair=TRUE,predator=TRUE}      => {tail=TRUE} 0.1584158 0.8000000
##      lift
## [1] 1.104957
## [2] 1.097284
## [3] 1.077333
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [2] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [3] {venomous=FALSE,legs=FALSE}    => {tail=TRUE} 0.1485149 0.7894737
## [4] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
##      lift
## [1] 1.157661
## [2] 1.101818
## [3] 1.063158
## [4] 1.059378
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                          => {airborne=FALSE} 0.1287129
## [2] {fins=TRUE}                           => {airborne=FALSE} 0.1683168
## [3] {breathes=FALSE}                      => {airborne=FALSE} 0.2079208
## [4] {legs=FALSE}                         => {airborne=FALSE} 0.2277228
## [5] {aquatic=TRUE,toothed=TRUE}            => {airborne=FALSE} 0.2277228
## [6] {feathers=FALSE,aquatic=TRUE}          => {airborne=FALSE} 0.2970297
## [7] {milk=TRUE,predator=TRUE}              => {airborne=FALSE} 0.2178218
## [8] {predator=TRUE,type=mammal}            => {airborne=FALSE} 0.2178218
## [9] {eggs=FALSE,predator=TRUE}             => {airborne=FALSE} 0.2277228
## [10] {hair=TRUE,predator=TRUE}              => {airborne=FALSE} 0.1980198
## [11] {feathers=FALSE,catsize=TRUE}          => {airborne=FALSE} 0.3762376
## [12] {predator=TRUE,toothed=TRUE}           => {airborne=FALSE} 0.3663366
## [13] {hair=FALSE,toothed=TRUE}              => {airborne=FALSE} 0.2277228
## [14] {eggs=TRUE,toothed=TRUE}               => {airborne=FALSE} 0.1980198
## [15] {milk=FALSE,toothed=TRUE}              => {airborne=FALSE} 0.2079208
## [16] {feathers=FALSE,predator=TRUE}          => {airborne=FALSE} 0.4554455
## [17] {feathers=FALSE,backbone=TRUE}         => {airborne=FALSE} 0.6039604
## [18] {toothed=TRUE}                        => {airborne=FALSE} 0.5841584
## [19] {predator=TRUE,catsize=TRUE}            => {airborne=FALSE} 0.2673267
## [20] {feathers=FALSE,tail=TRUE}              => {airborne=FALSE} 0.5247525
## [21] {eggs=FALSE}                          => {airborne=FALSE} 0.3960396
## [22] {milk=TRUE}                           => {airborne=FALSE} 0.3861386
## [23] {type=mammal}                          => {airborne=FALSE} 0.3861386
## [24] {hair=FALSE,feathers=FALSE}            => {airborne=FALSE} 0.3564356
## [25] {catsize=TRUE}                         => {airborne=FALSE} 0.4059406
## [26] {predator=TRUE,tail=FALSE}             => {airborne=FALSE} 0.1287129

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## [27] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [28] {feathers=FALSE,domestic=FALSE} => {airborne=FALSE} 0.6336634
## [29] {predator=TRUE} => {airborne=FALSE} 0.4851485
## [30] {aquatic=TRUE} => {airborne=FALSE} 0.3069307
## [31] {hair=TRUE} => {airborne=FALSE} 0.3663366
## [32] {venomous=FALSE,tail=FALSE} => {airborne=FALSE} 0.1782178
## [33] {backbone=TRUE,domestic=FALSE} => {airborne=FALSE} 0.5544554
## [34] {backbone=TRUE} => {airborne=FALSE} 0.6435644
## [35] {tail=FALSE} => {airborne=FALSE} 0.1980198
## [36] {tail=TRUE} => {airborne=FALSE} 0.5643564
## [37] {aquatic=FALSE} => {airborne=FALSE} 0.4554455
## [38] {hair=FALSE} => {airborne=FALSE} 0.3960396
## [39] {backbone=FALSE} => {airborne=FALSE} 0.1188119
## [40] {milk=FALSE} => {airborne=FALSE} 0.3762376
## [41] {eggs=TRUE} => {airborne=FALSE} 0.3663366
## [42] {predator=FALSE} => {airborne=FALSE} 0.2772277
## [43] {toothed=FALSE} => {airborne=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 1.3116883
## [2] 1.0000000 1.3116883
## [3] 1.0000000 1.3116883
## [4] 1.0000000 1.3116883
## [5] 1.0000000 1.3116883
## [6] 1.0000000 1.3116883
## [7] 1.0000000 1.3116883
## [8] 1.0000000 1.3116883
## [9] 1.0000000 1.3116883
## [10] 1.0000000 1.3116883
## [11] 1.0000000 1.3116883
## [12] 1.0000000 1.3116883
## [13] 1.0000000 1.3116883
## [14] 1.0000000 1.3116883
## [15] 1.0000000 1.3116883
## [16] 0.9787234 1.2837800
## [17] 0.9682540 1.2700474
## [18] 0.9672131 1.2686821
## [19] 0.9642857 1.2648423
## [20] 0.9636364 1.2639906
## [21] 0.9523810 1.2492270
## [22] 0.9512195 1.2477035
## [23] 0.9512195 1.2477035
## [24] 0.9473684 1.2426521
## [25] 0.9318182 1.2222550
## [26] 0.9285714 1.2179963
## [27] 0.9178082 1.2038783
## [28] 0.9014085 1.1823669
## [29] 0.8750000 1.1477273
## [30] 0.8611111 1.1295094
## [31] 0.8604651 1.1286620
## [32] 0.8181818 1.0731995
## [33] 0.7887324 1.0345711
## [34] 0.7831325 1.0272258
## [35] 0.7692308 1.0089910
## [36] 0.7600000 0.9968831

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## [37] 0.7076923 0.9282717
## [38] 0.6896552 0.9046126
## [39] 0.6666667 0.8744589
## [40] 0.6333333 0.8307359
## [41] 0.6271186 0.8225842
## [42] 0.6222222 0.8161616
## [43] 0.4500000 0.5902597
##      lhs                      rhs          support  confidence lift
## [1] {type=bird}                => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [2] {feathers=TRUE}             => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [3] {toothed=FALSE}             => {airborne=TRUE} 0.2178218 0.5500000 2.3145833
## [4] {aquatic=FALSE}             => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [5] {venomous=FALSE}            => {airborne=TRUE} 0.2178218 0.2365591 0.9955197
##      lhs                      rhs          support
## [1] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [2] {venomous=FALSE,tail=FALSE}      => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 0.9178082 1.203878
## [2] 0.8181818 1.073200
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=fish}                  => {airborne=FALSE} 0.1287129
## [2] {fins=TRUE}                   => {airborne=FALSE} 0.1683168
## [3] {breathes=FALSE}              => {airborne=FALSE} 0.2079208
## [4] {legs=FALSE}                  => {airborne=FALSE} 0.2277228
## [5] {aquatic=TRUE,toothed=TRUE}    => {airborne=FALSE} 0.2277228
## [6] {feathers=FALSE,aquatic=TRUE}  => {airborne=FALSE} 0.2970297
## [7] {milk=TRUE,predator=TRUE}       => {airborne=FALSE} 0.2178218
## [8] {predator=TRUE,type=mammal}    => {airborne=FALSE} 0.2178218
## [9] {eggs=FALSE,predator=TRUE}     => {airborne=FALSE} 0.2277228
## [10] {hair=TRUE,predator=TRUE}       => {airborne=FALSE} 0.1980198
## [11] {feathers=FALSE,catsize=TRUE}  => {airborne=FALSE} 0.3762376
## [12] {predator=TRUE,toothed=TRUE}   => {airborne=FALSE} 0.3663366
## [13] {hair=FALSE,toothed=TRUE}      => {airborne=FALSE} 0.2277228
## [14] {eggs=TRUE,toothed=TRUE}       => {airborne=FALSE} 0.1980198
## [15] {milk=FALSE,toothed=TRUE}      => {airborne=FALSE} 0.2079208
## [16] {feathers=FALSE,predator=TRUE} => {airborne=FALSE} 0.4554455
## [17] {feathers=FALSE,backbone=TRUE} => {airborne=FALSE} 0.6039604
## [18] {toothed=TRUE}                 => {airborne=FALSE} 0.5841584
## [19] {predator=TRUE,catsize=TRUE}   => {airborne=FALSE} 0.2673267
## [20] {feathers=FALSE,tail=TRUE}     => {airborne=FALSE} 0.5247525
## [21] {eggs=FALSE}                   => {airborne=FALSE} 0.3960396
## [22] {milk=TRUE}                     => {airborne=FALSE} 0.3861386
## [23] {type=mammal}                   => {airborne=FALSE} 0.3861386
## [24] {hair=FALSE,feathers=FALSE}    => {airborne=FALSE} 0.3564356
## [25] {catsize=TRUE}                  => {airborne=FALSE} 0.4059406
## [26] {predator=TRUE,tail=FALSE}     => {airborne=FALSE} 0.1287129
## [27] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [28] {feathers=FALSE,domestic=FALSE} => {airborne=FALSE} 0.6336634
## [29] {predator=TRUE}                 => {airborne=FALSE} 0.4851485
## [30] {aquatic=TRUE}                  => {airborne=FALSE} 0.3069307
## [31] {hair=TRUE}                     => {airborne=FALSE} 0.3663366
## [32] {venomous=FALSE,tail=FALSE}    => {airborne=FALSE} 0.1782178
## [33] {backbone=TRUE,domestic=FALSE} => {airborne=FALSE} 0.5544554

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## [34] {backbone=TRUE}          => {airborne=FALSE} 0.6435644
## [35] {tail=FALSE}              => {airborne=FALSE} 0.1980198
## [36] {tail=TRUE}               => {airborne=FALSE} 0.5643564
## [37] {aquatic=FALSE}           => {airborne=FALSE} 0.4554455
## [38] {hair=FALSE}              => {airborne=FALSE} 0.3960396
## [39] {backbone=FALSE}          => {airborne=FALSE} 0.1188119
## [40] {milk=FALSE}              => {airborne=FALSE} 0.3762376
## [41] {eggs=TRUE}               => {airborne=FALSE} 0.3663366
## [42] {predator=FALSE}          => {airborne=FALSE} 0.2772277
## [43] {toothed=FALSE}           => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 1.3116883
## [2] 1.0000000 1.3116883
## [3] 1.0000000 1.3116883
## [4] 1.0000000 1.3116883
## [5] 1.0000000 1.3116883
## [6] 1.0000000 1.3116883
## [7] 1.0000000 1.3116883
## [8] 1.0000000 1.3116883
## [9] 1.0000000 1.3116883
## [10] 1.0000000 1.3116883
## [11] 1.0000000 1.3116883
## [12] 1.0000000 1.3116883
## [13] 1.0000000 1.3116883
## [14] 1.0000000 1.3116883
## [15] 1.0000000 1.3116883
## [16] 0.9787234 1.2837800
## [17] 0.9682540 1.2700474
## [18] 0.9672131 1.2686821
## [19] 0.9642857 1.2648423
## [20] 0.9636364 1.2639906
## [21] 0.9523810 1.2492270
## [22] 0.9512195 1.2477035
## [23] 0.9512195 1.2477035
## [24] 0.9473684 1.2426521
## [25] 0.9318182 1.2222550
## [26] 0.9285714 1.2179963
## [27] 0.9178082 1.2038783
## [28] 0.9014085 1.1823669
## [29] 0.8750000 1.1477273
## [30] 0.8611111 1.1295094
## [31] 0.8604651 1.1286620
## [32] 0.8181818 1.0731995
## [33] 0.7887324 1.0345711
## [34] 0.7831325 1.0272258
## [35] 0.7692308 1.0089910
## [36] 0.7600000 0.9968831
## [37] 0.7076923 0.9282717
## [38] 0.6896552 0.9046126
## [39] 0.6666667 0.8744589
## [40] 0.6333333 0.8307359
## [41] 0.6271186 0.8225842
## [42] 0.6222222 0.8161616
## [43] 0.4500000 0.5902597

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##      lhs                rhs                support  confidence lift
## [1] {type=bird}          => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [2] {feathers=TRUE}      => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [3] {toothed=FALSE}     => {airborne=TRUE} 0.2178218 0.5500000 2.3145833
## [4] {aquatic=FALSE}     => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [5] {venomous=FALSE}    => {airborne=TRUE} 0.2178218 0.2365591 0.9955197
##      lhs                rhs                support
## [1] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [2] {venomous=FALSE,tail=FALSE}    => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 0.9178082 1.203878
## [2] 0.8181818 1.073200
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs                support  confidence
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000
## [2] {feathers=TRUE}      => {legs=TRUE} 0.1980198 1.0000000
## [3] {airborne=TRUE}      => {legs=TRUE} 0.2376238 1.0000000
## [4] {breathes=TRUE,domestic=TRUE} => {legs=TRUE} 0.1188119 1.0000000
## [5] {fins=FALSE,domestic=TRUE}    => {legs=TRUE} 0.1188119 1.0000000
## [6] {toothed=FALSE,tail=TRUE}    => {legs=TRUE} 0.2277228 1.0000000
## [7] {toothed=FALSE,backbone=TRUE} => {legs=TRUE} 0.2178218 1.0000000
## [8] {milk=TRUE,predator=FALSE}    => {legs=TRUE} 0.1881188 1.0000000
## [9] {milk=TRUE,fins=FALSE}       => {legs=TRUE} 0.3663366 1.0000000
## [10] {predator=FALSE,type=mammal}  => {legs=TRUE} 0.1881188 1.0000000
## [11] {fins=FALSE,type=mammal}    => {legs=TRUE} 0.3663366 1.0000000
## [12] {eggs=FALSE,predator=FALSE}  => {legs=TRUE} 0.1881188 1.0000000
## [13] {hair=TRUE,catsize=FALSE}    => {legs=TRUE} 0.1287129 1.0000000
## [14] {hair=TRUE,fins=FALSE}      => {legs=TRUE} 0.4059406 1.0000000
## [15] {predator=FALSE,catsize=TRUE} => {legs=TRUE} 0.1584158 1.0000000
## [16] {fins=FALSE,catsize=TRUE}    => {legs=TRUE} 0.3564356 1.0000000
## [17] {hair=TRUE}                 => {legs=TRUE} 0.4158416 0.9767442
## [18] {eggs=FALSE,fins=FALSE}      => {legs=TRUE} 0.3663366 0.9736842
## [19] {aquatic=FALSE,backbone=TRUE} => {legs=TRUE} 0.5049505 0.9622642
## [20] {backbone=TRUE,fins=FALSE}    => {legs=TRUE} 0.6237624 0.9545455
## [21] {predator=FALSE,fins=FALSE}   => {legs=TRUE} 0.3861386 0.9512195
## [22] {fins=FALSE,tail=TRUE}       => {legs=TRUE} 0.5544554 0.9491525
## [23] {venomous=FALSE,fins=FALSE}  => {legs=TRUE} 0.7227723 0.9480519
## [24] {breathes=TRUE,fins=FALSE}   => {legs=TRUE} 0.7128713 0.9473684
## [25] {toothed=FALSE,breathes=TRUE} => {legs=TRUE} 0.3069307 0.9393939
## [26] {aquatic=FALSE,venomous=FALSE} => {legs=TRUE} 0.5643564 0.9344262
## [27] {toothed=TRUE,fins=FALSE}    => {legs=TRUE} 0.4059406 0.9318182
## [28] {milk=TRUE}                  => {legs=TRUE} 0.3762376 0.9268293
## [29] {type=mammal}                 => {legs=TRUE} 0.3762376 0.9268293
## [30] {domestic=TRUE}               => {legs=TRUE} 0.1188119 0.9230769
## [31] {aquatic=FALSE}               => {legs=TRUE} 0.5940594 0.9230769
## [32] {breathes=TRUE,venomous=FALSE} => {legs=TRUE} 0.6831683 0.9200000
## [33] {toothed=FALSE,venomous=FALSE} => {legs=TRUE} 0.3267327 0.9166667
## [34] {eggs=FALSE}                  => {legs=TRUE} 0.3762376 0.9047619
## [35] {toothed=FALSE}               => {legs=TRUE} 0.3564356 0.9000000
## [36] {predator=FALSE,backbone=TRUE} => {legs=TRUE} 0.3168317 0.8888889
## [37] {predator=FALSE}               => {legs=TRUE} 0.3861386 0.8666667
## [38] {catsize=TRUE}                 => {legs=TRUE} 0.3663366 0.8409091
## [39] {venomous=FALSE,tail=FALSE}   => {legs=TRUE} 0.1782178 0.8181818
## [40] {tail=FALSE}                  => {legs=TRUE} 0.2079208 0.8076923

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## [41] {backbone=FALSE}      => {legs=TRUE} 0.1386139 0.7777778
## [42] {tail=TRUE}            => {legs=TRUE} 0.5643564 0.7600000
## [43] {catsize=FALSE}        => {legs=TRUE} 0.4059406 0.7192982
## [44] {airborne=FALSE}       => {legs=TRUE} 0.5346535 0.7012987
## [45] {toothed=TRUE}         => {legs=TRUE} 0.4158416 0.6885246
## [46] {eggs=TRUE}            => {legs=TRUE} 0.3960396 0.6779661
## [47] {milk=FALSE}           => {legs=TRUE} 0.3960396 0.6666667
## [48] {aquatic=TRUE}         => {legs=TRUE} 0.1782178 0.5000000
## lift
## [1] 1.2948718
## [2] 1.2948718
## [3] 1.2948718
## [4] 1.2948718
## [5] 1.2948718
## [6] 1.2948718
## [7] 1.2948718
## [8] 1.2948718
## [9] 1.2948718
## [10] 1.2948718
## [11] 1.2948718
## [12] 1.2948718
## [13] 1.2948718
## [14] 1.2948718
## [15] 1.2948718
## [16] 1.2948718
## [17] 1.2647585
## [18] 1.2607962
## [19] 1.2460087
## [20] 1.2360140
## [21] 1.2317073
## [22] 1.2290309
## [23] 1.2276057
## [24] 1.2267206
## [25] 1.2163947
## [26] 1.2099622
## [27] 1.2065851
## [28] 1.2001251
## [29] 1.2001251
## [30] 1.1952663
## [31] 1.1952663
## [32] 1.1912821
## [33] 1.1869658
## [34] 1.1715507
## [35] 1.1653846
## [36] 1.1509972
## [37] 1.1222222
## [38] 1.0888695
## [39] 1.0594406
## [40] 1.0458580
## [41] 1.0071225
## [42] 0.9841026
## [43] 0.9313990
## [44] 0.9080919
## [45] 0.8915511

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## [46] 0.8778792
## [47] 0.8632479
## [48] 0.6474359
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {legs=FALSE} 0.1287129 1.0000000 4.391304
## [2] {fins=TRUE}           => {legs=FALSE} 0.1584158 0.9411765 4.132992
## [3] {breathes=FALSE}     => {legs=FALSE} 0.1584158 0.7619048 3.345756
## [4] {predator=TRUE}      => {legs=FALSE} 0.1683168 0.3035714 1.333075
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}      => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}     => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}      => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}       => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}        => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}            => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}            => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}           => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}            => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}          => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}     => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}    => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                   => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}         => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                       => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}        => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}          => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                      => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}           => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                       => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                     => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE}    => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                  => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}         => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}           => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}             => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}              => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}      => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}         => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}        => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}         => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}        => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}             => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                      => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}          => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}     => {aquatic=FALSE} 0.1485149

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## [45] {toothed=FALSE}	=> {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}	=> {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}	=> {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}	=> {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}	=> {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}	=> {aquatic=FALSE} 0.2871287
## confidence lift	
## [1] 1.0000000 1.5538462	
## [2] 1.0000000 1.5538462	
## [3] 1.0000000 1.5538462	
## [4] 1.0000000 1.5538462	
## [5] 1.0000000 1.5538462	
## [6] 1.0000000 1.5538462	
## [7] 1.0000000 1.5538462	
## [8] 1.0000000 1.5538462	
## [9] 0.9512195 1.4780488	
## [10] 0.9473684 1.4720648	
## [11] 0.9473684 1.4720648	
## [12] 0.9459459 1.4698545	
## [13] 0.9459459 1.4698545	
## [14] 0.9375000 1.4567308	
## [15] 0.9268293 1.4401501	
## [16] 0.9268293 1.4401501	
## [17] 0.9230769 1.4343195	
## [18] 0.9230769 1.4343195	
## [19] 0.9069767 1.4093023	
## [20] 0.8780488 1.3643527	
## [21] 0.8636364 1.3419580	
## [22] 0.8611111 1.3380342	
## [23] 0.8571429 1.3318681	
## [24] 0.8571429 1.3318681	
## [25] 0.8536585 1.3264540	
## [26] 0.8536585 1.3264540	
## [27] 0.8529412 1.3253394	
## [28] 0.8444444 1.3121368	
## [29] 0.8421053 1.3085020	
## [30] 0.8378378 1.3018711	
## [31] 0.8333333 1.2948718	
## [32] 0.8305085 1.2904824	
## [33] 0.8245614 1.2812416	
## [34] 0.8219178 1.2771338	
## [35] 0.8048780 1.2506567	
## [36] 0.8035714 1.2486264	
## [37] 0.8030303 1.2477855	
## [38] 0.7968750 1.2382212	
## [39] 0.7931034 1.2323607	
## [40] 0.7922078 1.2309690	
## [41] 0.7792208 1.2107892	
## [42] 0.7738095 1.2023810	
## [43] 0.6956522 1.0809365	
## [44] 0.6818182 1.0594406	
## [45] 0.6750000 1.0488462	
## [46] 0.6229508 0.9679697	
## [47] 0.6153846 0.9562130	

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## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}                 => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}            => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}                => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}              => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}                  => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}             => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}              => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}              => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111
##      lhs                      rhs          support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441
##      lhs                      rhs          support  confidence
## [1] {fins=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}        => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
##      lhs                      rhs          support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441
##      lhs                      rhs          support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}    => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}     => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}      => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}  => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872

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## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}    => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}    => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}     => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}      => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}         => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}        => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}   => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                 => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                     => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}      => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}       => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                    => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                     => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                   => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}        => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}          => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}           => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                    => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}       => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}   => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE}                 => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}                  => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}                    => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}                => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}                 => {aquatic=FALSE} 0.3366337

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## [50] {eggs=TRUE}                                => {aquatic=FALSE} 0.2871287
##      confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556

```

```

## [2] {fins=TRUE}      => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE} => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}    => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}  => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}     => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE} => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE} => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE} => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111
##      lhs                                rhs          support  confidence
## [1] {backbone=TRUE,fins=FALSE}    => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441
##      lhs                                rhs          support  confidence
## [1] {fins=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}       => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}   => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
##      lhs                                rhs          support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969
##      lhs                                rhs          support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441
##      lhs                                rhs          support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}    => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}     => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}      => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}  => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support

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```

## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}      => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}    => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}       => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}         => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}        => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}   => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                 => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                     => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}       => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                   => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                     => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                   => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}        => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}          => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}           => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                    => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}       => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}   => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE}                 => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}                  => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}                    => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}                => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}                 => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}                     => {aquatic=FALSE} 0.2871287
## confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462

```

```

## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}      => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE} => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}     => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}  => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}      => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926

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## [7] {venomous=FALSE} => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE} => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE} => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111
##      lhs                                rhs            support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441
##      lhs                                rhs            support  confidence
## [1] {fins=FALSE,tail=TRUE} => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE} => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
##      lhs                                rhs            support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441
##      lhs                                rhs            support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE} => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE} => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {type=fish} => {backbone=TRUE} 0.1287129
## [2] {fins=TRUE} => {backbone=TRUE} 0.1683168
## [3] {type=bird} => {backbone=TRUE} 0.1980198
## [4] {feathers=TRUE} => {backbone=TRUE} 0.1980198
## [5] {milk=TRUE} => {backbone=TRUE} 0.4059406

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## [6] {type=mammal} => {backbone=TRUE} 0.4059406
## [7] {toothed=TRUE} => {backbone=TRUE} 0.6039604
## [8] {venomous=FALSE,domestic=TRUE} => {backbone=TRUE} 0.1188119
## [9] {aquatic=TRUE,tail=TRUE} => {backbone=TRUE} 0.2574257
## [10] {aquatic=TRUE,breathes=TRUE} => {backbone=TRUE} 0.1584158
## [11] {hair=TRUE,predator=TRUE} => {backbone=TRUE} 0.1980198
## [12] {hair=TRUE,tail=TRUE} => {backbone=TRUE} 0.3267327
## [13] {predator=FALSE,catsize=TRUE} => {backbone=TRUE} 0.1584158
## [14] {tail=TRUE,catsize=TRUE} => {backbone=TRUE} 0.3762376
## [15] {venomous=FALSE,tail=TRUE} => {backbone=TRUE} 0.7029703
## [16] {tail=TRUE} => {backbone=TRUE} 0.7326733
## [17] {catsize=TRUE} => {backbone=TRUE} 0.4257426
## [18] {predator=TRUE,breathes=TRUE} => {backbone=TRUE} 0.3663366
## [19] {domestic=TRUE} => {backbone=TRUE} 0.1188119
## [20] {hair=TRUE,domestic=FALSE} => {backbone=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {backbone=TRUE} 0.5049505
## [22] {breathes=TRUE,venomous=FALSE} => {backbone=TRUE} 0.6633663
## [23] {aquatic=FALSE,predator=TRUE} => {backbone=TRUE} 0.2376238
## [24] {airborne=FALSE,aquatic=FALSE} => {backbone=TRUE} 0.3960396
## [25] {breathes=TRUE} => {backbone=TRUE} 0.6831683
## [26] {predator=TRUE,venomous=FALSE} => {backbone=TRUE} 0.4257426
## [27] {airborne=FALSE,venomous=FALSE} => {backbone=TRUE} 0.6039604
## [28] {airborne=FALSE,predator=FALSE} => {backbone=TRUE} 0.2376238
## [29] {airborne=FALSE,legs=TRUE} => {backbone=TRUE} 0.4554455
## [30] {legs=FALSE} => {backbone=TRUE} 0.1881188
## [31] {legs=TRUE} => {backbone=TRUE} 0.6336634
## [32] {aquatic=FALSE} => {backbone=TRUE} 0.5247525
## [33] {predator=FALSE} => {backbone=TRUE} 0.3564356
## [34] {feathers=FALSE} => {backbone=TRUE} 0.6237624
## [35] {airborne=TRUE} => {backbone=TRUE} 0.1782178
## [36] {eggs=TRUE} => {backbone=TRUE} 0.4158416
## [37] {catsize=FALSE} => {backbone=TRUE} 0.3960396
## [38] {breathes=FALSE} => {backbone=TRUE} 0.1386139
## [39] {toothed=FALSE} => {backbone=TRUE} 0.2178218
## confidence lift
## [1] 1.0000000 1.2168675
## [2] 1.0000000 1.2168675
## [3] 1.0000000 1.2168675
## [4] 1.0000000 1.2168675
## [5] 1.0000000 1.2168675
## [6] 1.0000000 1.2168675
## [7] 1.0000000 1.2168675
## [8] 1.0000000 1.2168675
## [9] 1.0000000 1.2168675
## [10] 1.0000000 1.2168675
## [11] 1.0000000 1.2168675
## [12] 1.0000000 1.2168675
## [13] 1.0000000 1.2168675
## [14] 1.0000000 1.2168675
## [15] 1.0000000 1.2168675
## [16] 0.9866667 1.2006426
## [17] 0.9772727 1.1892114
## [18] 0.9487179 1.1544640
## [19] 0.9230769 1.1232623

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## [20] 0.9117647 1.1094968
## [21] 0.9107143 1.1082186
## [22] 0.8933333 1.0870683
## [23] 0.8888889 1.0816600
## [24] 0.8695652 1.0581456
## [25] 0.8625000 1.0495482
## [26] 0.8600000 1.0465060
## [27] 0.8591549 1.0454777
## [28] 0.8571429 1.0430293
## [29] 0.8518519 1.0365908
## [30] 0.8260870 1.0052383
## [31] 0.8205128 0.9984554
## [32] 0.8153846 0.9922150
## [33] 0.8000000 0.9734940
## [34] 0.7777778 0.9464525
## [35] 0.7500000 0.9126506
## [36] 0.7118644 0.8662446
## [37] 0.7017544 0.8539421
## [38] 0.6666667 0.8112450
## [39] 0.5500000 0.6692771
##      lhs                      rhs          support  confidence lift
## [1] {toothed=FALSE} => {backbone=FALSE} 0.1782178 0.4500000 2.525000
## [2] {eggs=TRUE}      => {backbone=FALSE} 0.1683168 0.2881356 1.616761
## [3] {aquatic=FALSE} => {backbone=FALSE} 0.1188119 0.1846154 1.035897
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,predator=TRUE} => {backbone=TRUE} 0.2376238 0.8888889
## [2] {airborne=FALSE,aquatic=FALSE} => {backbone=TRUE} 0.3960396 0.8695652
##      lift
## [1] 1.081660
## [2] 1.058146
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=fish}                  => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE}                   => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}    => {toothed=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE}         => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE}     => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE}     => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE}                  => {toothed=TRUE} 0.4059406
## [9] {hair=TRUE,backbone=TRUE}      => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE}     => {toothed=TRUE} 0.3564356
## [11] {hair=TRUE,tail=TRUE}          => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE} => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE}      => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE}     => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE}  => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE} => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE}     => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE}  => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE}    => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE}                  => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE}   => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE} => {toothed=TRUE} 0.5841584

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## [23] {airborne=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE} => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE} => {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE} => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [33] {aquatic=TRUE,backbone=TRUE} => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE} => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE} => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE} => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE} => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE} => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE} => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE} => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE} => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE} => {toothed=TRUE} 0.2376238
## [46] {catsize=FALSE} => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE} => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE} => {toothed=TRUE} 0.1980198
## confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154
## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508
## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216
## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368

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## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488
## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}    => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}     => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE}  => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964

##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}    => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267 0.6923077

##      lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092
## [5] 1.165149
## [6] 1.146280

## [1] "Número de reglas con consecuente negado"

##      lhs                      rhs      support
## [1] {type=fish}      => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE}        => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE} => {toothed=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE}    => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE} => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE} => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE}          => {toothed=TRUE} 0.4059406
## [9] {hair=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE} => {toothed=TRUE} 0.3564356

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## [11] {hair=TRUE,tail=TRUE}      => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE} => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE}    => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE}   => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE} => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE}   => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE}  => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE}                => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE} => {toothed=TRUE} 0.5841584
## [23] {airborne=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE}              => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE} => {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE} => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE}  => {toothed=TRUE} 0.2277228
## [33] {aquatic=TRUE,backbone=TRUE}  => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE}            => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE}     => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE}      => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE}                  => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE}             => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE}              => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE}               => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE}             => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE}              => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE}             => {toothed=TRUE} 0.2376238
## [46] {catsize=FALSE}              => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE}                 => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE}                  => {toothed=TRUE} 0.1980198
## confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154
## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508
## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216

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## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368
## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488
## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}    => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}     => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE}  => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964

##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}    => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267 0.6923077

##      lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092
## [5] 1.165149
## [6] 1.146280

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {eggs=TRUE} 0.1287129 1.0000000
## [2] {type=bird}                        => {eggs=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                     => {eggs=TRUE} 0.1980198 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {eggs=TRUE} 0.1287129 1.0000000
## [5] {backbone=FALSE,venomous=FALSE}      => {eggs=TRUE} 0.1386139 1.0000000
## [6] {breathes=FALSE,venomous=FALSE}      => {eggs=TRUE} 0.1782178 1.0000000
## [7] {hair=FALSE,airborne=TRUE}           => {eggs=TRUE} 0.1782178 1.0000000
## [8] {milk=FALSE,airborne=TRUE}           => {eggs=TRUE} 0.2178218 1.0000000
## [9] {hair=FALSE,tail=FALSE}              => {eggs=TRUE} 0.1584158 1.0000000
## [10] {milk=FALSE,tail=FALSE}              => {eggs=TRUE} 0.1980198 1.0000000
## [11] {aquatic=TRUE,toothed=FALSE}          => {eggs=TRUE} 0.1287129 1.0000000
## [12] {toothed=FALSE,backbone=TRUE}        => {eggs=TRUE} 0.2178218 1.0000000
## [13] {milk=FALSE,catsize=TRUE}             => {eggs=TRUE} 0.1188119 1.0000000
## [14] {hair=FALSE,predator=FALSE}           => {eggs=TRUE} 0.2178218 1.0000000
## [15] {milk=FALSE,predator=FALSE}           => {eggs=TRUE} 0.2574257 1.0000000
## [16] {milk=FALSE,venomous=FALSE}           => {eggs=TRUE} 0.5148515 1.0000000
## [17] {milk=FALSE,backbone=TRUE}            => {eggs=TRUE} 0.4059406 0.9761905
## [18] {toothed=FALSE}                      => {eggs=TRUE} 0.3861386 0.9750000
## [19] {milk=FALSE,legs=TRUE}                => {eggs=TRUE} 0.3861386 0.9750000
## [20] {milk=FALSE,breathes=TRUE}            => {eggs=TRUE} 0.3762376 0.9743590
## [21] {hair=FALSE,legs=TRUE}                => {eggs=TRUE} 0.3465347 0.9722222
## [22] {hair=FALSE,aquatic=FALSE}            => {eggs=TRUE} 0.2475248 0.9615385
## [23] {hair=FALSE,venomous=FALSE}           => {eggs=TRUE} 0.4950495 0.9615385
## [24] {aquatic=TRUE,catsize=FALSE}          => {eggs=TRUE} 0.2178218 0.9565217
## [25] {hair=FALSE,catsize=FALSE}            => {eggs=TRUE} 0.4158416 0.9545455
## [26] {hair=FALSE,fins=FALSE}               => {eggs=TRUE} 0.4059406 0.9534884
## [27] {breathes=FALSE}                     => {eggs=TRUE} 0.1980198 0.9523810
## [28] {legs=FALSE,catsize=FALSE}            => {eggs=TRUE} 0.1485149 0.9375000
## [29] {hair=FALSE}                         => {eggs=TRUE} 0.5346535 0.9310345
## [30] {airborne=TRUE}                      => {eggs=TRUE} 0.2178218 0.9166667
## [31] {aquatic=TRUE,fins=FALSE}             => {eggs=TRUE} 0.1683168 0.8947368
## [32] {aquatic=TRUE,legs=TRUE}              => {eggs=TRUE} 0.1584158 0.8888889
## [33] {predator=TRUE,catsize=FALSE}          => {eggs=TRUE} 0.2376238 0.8571429
## [34] {aquatic=TRUE,venomous=FALSE}         => {eggs=TRUE} 0.2673267 0.8437500
## [35] {venomous=FALSE,legs=FALSE}           => {eggs=TRUE} 0.1584158 0.8421053
## [36] {aquatic=TRUE}                       => {eggs=TRUE} 0.2970297 0.8333333
## [37] {legs=FALSE}                         => {eggs=TRUE} 0.1881188 0.8260870
## [38] {tail=FALSE,domestic=FALSE}           => {eggs=TRUE} 0.1881188 0.8260870
## [39] {domestic=FALSE,catsize=FALSE}         => {eggs=TRUE} 0.4059406 0.8200000
## [40] {venomous=FALSE,catsize=FALSE}         => {eggs=TRUE} 0.4059406 0.8200000
## [41] {tail=FALSE}                         => {eggs=TRUE} 0.1980198 0.7692308
## [42] {fins=TRUE}                          => {eggs=TRUE} 0.1287129 0.7647059
## [43] {predator=FALSE,domestic=FALSE}       => {eggs=TRUE} 0.2079208 0.6176471
## [44] {predator=TRUE}                      => {eggs=TRUE} 0.3267327 0.5892857
## [45] {catsize=TRUE}                       => {eggs=TRUE} 0.1287129 0.2954545
##      lift
## [1] 1.7118644
## [2] 1.7118644
## [3] 1.7118644
## [4] 1.7118644
## [5] 1.7118644
## [6] 1.7118644

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## [7] 1.7118644
## [8] 1.7118644
## [9] 1.7118644
## [10] 1.7118644
## [11] 1.7118644
## [12] 1.7118644
## [13] 1.7118644
## [14] 1.7118644
## [15] 1.7118644
## [16] 1.7118644
## [17] 1.6711057
## [18] 1.6690678
## [19] 1.6690678
## [20] 1.6679704
## [21] 1.6643126
## [22] 1.6460235
## [23] 1.6460235
## [24] 1.6374355
## [25] 1.6340524
## [26] 1.6322428
## [27] 1.6303471
## [28] 1.6048729
## [29] 1.5938048
## [30] 1.5692090
## [31] 1.5316682
## [32] 1.5216573
## [33] 1.4673123
## [34] 1.4443856
## [35] 1.4415700
## [36] 1.4265537
## [37] 1.4141489
## [38] 1.4141489
## [39] 1.4037288
## [40] 1.4037288
## [41] 1.3168188
## [42] 1.3090728
## [43] 1.0573280
## [44] 1.0087772
## [45] 0.5057781
##      lhs                rhs          support  confidence lift
## [1] {milk=TRUE}      => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [2] {type=mammal}    => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [3] {backbone=TRUE} => {eggs=FALSE} 0.4059406 0.4939759 1.187894
##      lhs                rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {eggs=TRUE} 0.2178218 1.0000000
## [2] {milk=FALSE,backbone=TRUE}    => {eggs=TRUE} 0.4059406 0.9761905
##      lift
## [1] 1.711864
## [2] 1.671106
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs          support  confidence
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000

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## [4] {milk=FALSE,fins=TRUE}      => {eggs=TRUE} 0.1287129 1.0000000
## [5] {backbone=FALSE,venomous=FALSE} => {eggs=TRUE} 0.1386139 1.0000000
## [6] {breathes=FALSE,venomous=FALSE} => {eggs=TRUE} 0.1782178 1.0000000
## [7] {hair=FALSE,airborne=TRUE}    => {eggs=TRUE} 0.1782178 1.0000000
## [8] {milk=FALSE,airborne=TRUE}    => {eggs=TRUE} 0.2178218 1.0000000
## [9] {hair=FALSE,tail=FALSE}      => {eggs=TRUE} 0.1584158 1.0000000
## [10] {milk=FALSE,tail=FALSE}      => {eggs=TRUE} 0.1980198 1.0000000
## [11] {aquatic=TRUE,toothed=FALSE}  => {eggs=TRUE} 0.1287129 1.0000000
## [12] {toothed=FALSE,backbone=TRUE} => {eggs=TRUE} 0.2178218 1.0000000
## [13] {milk=FALSE,catSize=TRUE}     => {eggs=TRUE} 0.1188119 1.0000000
## [14] {hair=FALSE,predator=FALSE}   => {eggs=TRUE} 0.2178218 1.0000000
## [15] {milk=FALSE,predator=FALSE}   => {eggs=TRUE} 0.2574257 1.0000000
## [16] {milk=FALSE,venomous=FALSE}   => {eggs=TRUE} 0.5148515 1.0000000
## [17] {milk=FALSE,backbone=TRUE}    => {eggs=TRUE} 0.4059406 0.9761905
## [18] {toothed=FALSE}              => {eggs=TRUE} 0.3861386 0.9750000
## [19] {milk=FALSE,legs=TRUE}        => {eggs=TRUE} 0.3861386 0.9750000
## [20] {milk=FALSE,breathes=TRUE}    => {eggs=TRUE} 0.3762376 0.9743590
## [21] {hair=FALSE,legs=TRUE}        => {eggs=TRUE} 0.3465347 0.9722222
## [22] {hair=FALSE,aquatic=FALSE}    => {eggs=TRUE} 0.2475248 0.9615385
## [23] {hair=FALSE,venomous=FALSE}   => {eggs=TRUE} 0.4950495 0.9615385
## [24] {aquatic=TRUE,catSize=FALSE}  => {eggs=TRUE} 0.2178218 0.9565217
## [25] {hair=FALSE,catSize=FALSE}    => {eggs=TRUE} 0.4158416 0.9545455
## [26] {hair=FALSE,fins=FALSE}       => {eggs=TRUE} 0.4059406 0.9534884
## [27] {breathes=FALSE}             => {eggs=TRUE} 0.1980198 0.9523810
## [28] {legs=FALSE,catSize=FALSE}    => {eggs=TRUE} 0.1485149 0.9375000
## [29] {hair=FALSE}                  => {eggs=TRUE} 0.5346535 0.9310345
## [30] {airborne=TRUE}               => {eggs=TRUE} 0.2178218 0.9166667
## [31] {aquatic=TRUE,fins=FALSE}     => {eggs=TRUE} 0.1683168 0.8947368
## [32] {aquatic=TRUE,legs=TRUE}      => {eggs=TRUE} 0.1584158 0.8888889
## [33] {predator=TRUE,catSize=FALSE} => {eggs=TRUE} 0.2376238 0.8571429
## [34] {aquatic=TRUE,venomous=FALSE} => {eggs=TRUE} 0.2673267 0.8437500
## [35] {venomous=FALSE,legs=FALSE}   => {eggs=TRUE} 0.1584158 0.8421053
## [36] {aquatic=TRUE}                => {eggs=TRUE} 0.2970297 0.8333333
## [37] {legs=FALSE}                  => {eggs=TRUE} 0.1881188 0.8260870
## [38] {tail=FALSE,domestic=FALSE}   => {eggs=TRUE} 0.1881188 0.8260870
## [39] {domestic=FALSE,catSize=FALSE} => {eggs=TRUE} 0.4059406 0.8200000
## [40] {venomous=FALSE,catSize=FALSE} => {eggs=TRUE} 0.4059406 0.8200000
## [41] {tail=FALSE}                  => {eggs=TRUE} 0.1980198 0.7692308
## [42] {fins=TRUE}                   => {eggs=TRUE} 0.1287129 0.7647059
## [43] {predator=FALSE,domestic=FALSE} => {eggs=TRUE} 0.2079208 0.6176471
## [44] {predator=TRUE}               => {eggs=TRUE} 0.3267327 0.5892857
## [45] {catSize=TRUE}                => {eggs=TRUE} 0.1287129 0.2954545
## lift
## [1] 1.7118644
## [2] 1.7118644
## [3] 1.7118644
## [4] 1.7118644
## [5] 1.7118644
## [6] 1.7118644
## [7] 1.7118644
## [8] 1.7118644
## [9] 1.7118644
## [10] 1.7118644
## [11] 1.7118644

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## [12] 1.7118644
## [13] 1.7118644
## [14] 1.7118644
## [15] 1.7118644
## [16] 1.7118644
## [17] 1.6711057
## [18] 1.6690678
## [19] 1.6690678
## [20] 1.6679704
## [21] 1.6643126
## [22] 1.6460235
## [23] 1.6460235
## [24] 1.6374355
## [25] 1.6340524
## [26] 1.6322428
## [27] 1.6303471
## [28] 1.6048729
## [29] 1.5938048
## [30] 1.5692090
## [31] 1.5316682
## [32] 1.5216573
## [33] 1.4673123
## [34] 1.4443856
## [35] 1.4415700
## [36] 1.4265537
## [37] 1.4141489
## [38] 1.4141489
## [39] 1.4037288
## [40] 1.4037288
## [41] 1.3168188
## [42] 1.3090728
## [43] 1.0573280
## [44] 1.0087772
## [45] 0.5057781
##      lhs                rhs          support  confidence lift
## [1] {milk=TRUE}      => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [2] {type=mammal}    => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [3] {backbone=TRUE} => {eggs=FALSE} 0.4059406 0.4939759 1.187894
##      lhs                rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {eggs=TRUE} 0.2178218 1.0000000
## [2] {milk=FALSE,backbone=TRUE}    => {eggs=TRUE} 0.4059406 0.9761905
##      lift
## [1] 1.711864
## [2] 1.671106
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs          support
## [1] {type=fish}              => {airborne=FALSE} 0.1287129
## [2] {fins=TRUE}               => {airborne=FALSE} 0.1683168
## [3] {breathes=FALSE}         => {airborne=FALSE} 0.2079208
## [4] {legs=FALSE}             => {airborne=FALSE} 0.2277228
## [5] {aquatic=TRUE,toothed=TRUE} => {airborne=FALSE} 0.2277228
## [6] {feathers=FALSE,aquatic=TRUE} => {airborne=FALSE} 0.2970297
## [7] {milk=TRUE,predator=TRUE}  => {airborne=FALSE} 0.2178218
## [8] {predator=TRUE,type=mammal} => {airborne=FALSE} 0.2178218

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## [9] {eggs=FALSE,predator=TRUE}      => {airborne=FALSE} 0.2277228
## [10] {hair=TRUE,predator=TRUE}       => {airborne=FALSE} 0.1980198
## [11] {feathers=FALSE,catsize=TRUE}   => {airborne=FALSE} 0.3762376
## [12] {predator=TRUE,toothed=TRUE}    => {airborne=FALSE} 0.3663366
## [13] {hair=FALSE,toothed=TRUE}       => {airborne=FALSE} 0.2277228
## [14] {eggs=TRUE,toothed=TRUE}        => {airborne=FALSE} 0.1980198
## [15] {milk=FALSE,toothed=TRUE}       => {airborne=FALSE} 0.2079208
## [16] {feathers=FALSE,predator=TRUE}  => {airborne=FALSE} 0.4554455
## [17] {feathers=FALSE,backbone=TRUE}  => {airborne=FALSE} 0.6039604
## [18] {toothed=TRUE}                  => {airborne=FALSE} 0.5841584
## [19] {predator=TRUE,catsize=TRUE}    => {airborne=FALSE} 0.2673267
## [20] {feathers=FALSE,tail=TRUE}      => {airborne=FALSE} 0.5247525
## [21] {eggs=FALSE}                   => {airborne=FALSE} 0.3960396
## [22] {milk=TRUE}                     => {airborne=FALSE} 0.3861386
## [23] {type=mammal}                   => {airborne=FALSE} 0.3861386
## [24] {hair=FALSE,feathers=FALSE}     => {airborne=FALSE} 0.3564356
## [25] {catsize=TRUE}                  => {airborne=FALSE} 0.4059406
## [26] {predator=TRUE,tail=FALSE}      => {airborne=FALSE} 0.1287129
## [27] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [28] {feathers=FALSE,domestic=FALSE} => {airborne=FALSE} 0.6336634
## [29] {predator=TRUE}                 => {airborne=FALSE} 0.4851485
## [30] {aquatic=TRUE}                  => {airborne=FALSE} 0.3069307
## [31] {hair=TRUE}                     => {airborne=FALSE} 0.3663366
## [32] {venomous=FALSE,tail=FALSE}     => {airborne=FALSE} 0.1782178
## [33] {backbone=TRUE,domestic=FALSE}  => {airborne=FALSE} 0.5544554
## [34] {backbone=TRUE}                 => {airborne=FALSE} 0.6435644
## [35] {tail=FALSE}                    => {airborne=FALSE} 0.1980198
## [36] {tail=TRUE}                     => {airborne=FALSE} 0.5643564
## [37] {aquatic=FALSE}                 => {airborne=FALSE} 0.4554455
## [38] {hair=FALSE}                    => {airborne=FALSE} 0.3960396
## [39] {backbone=FALSE}                => {airborne=FALSE} 0.1188119
## [40] {milk=FALSE}                    => {airborne=FALSE} 0.3762376
## [41] {eggs=TRUE}                     => {airborne=FALSE} 0.3663366
## [42] {predator=FALSE}                => {airborne=FALSE} 0.2772277
## [43] {toothed=FALSE}                 => {airborne=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 1.3116883
## [2] 1.0000000 1.3116883
## [3] 1.0000000 1.3116883
## [4] 1.0000000 1.3116883
## [5] 1.0000000 1.3116883
## [6] 1.0000000 1.3116883
## [7] 1.0000000 1.3116883
## [8] 1.0000000 1.3116883
## [9] 1.0000000 1.3116883
## [10] 1.0000000 1.3116883
## [11] 1.0000000 1.3116883
## [12] 1.0000000 1.3116883
## [13] 1.0000000 1.3116883
## [14] 1.0000000 1.3116883
## [15] 1.0000000 1.3116883
## [16] 0.9787234 1.2837800
## [17] 0.9682540 1.2700474
## [18] 0.9672131 1.2686821

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## [19] 0.9642857 1.2648423
## [20] 0.9636364 1.2639906
## [21] 0.9523810 1.2492270
## [22] 0.9512195 1.2477035
## [23] 0.9512195 1.2477035
## [24] 0.9473684 1.2426521
## [25] 0.9318182 1.2222550
## [26] 0.9285714 1.2179963
## [27] 0.9178082 1.2038783
## [28] 0.9014085 1.1823669
## [29] 0.8750000 1.1477273
## [30] 0.8611111 1.1295094
## [31] 0.8604651 1.1286620
## [32] 0.8181818 1.0731995
## [33] 0.7887324 1.0345711
## [34] 0.7831325 1.0272258
## [35] 0.7692308 1.0089910
## [36] 0.7600000 0.9968831
## [37] 0.7076923 0.9282717
## [38] 0.6896552 0.9046126
## [39] 0.6666667 0.8744589
## [40] 0.6333333 0.8307359
## [41] 0.6271186 0.8225842
## [42] 0.6222222 0.8161616
## [43] 0.4500000 0.5902597

##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [2] {feathers=TRUE} => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [3] {toothed=FALSE} => {airborne=TRUE} 0.2178218 0.5500000 2.3145833
## [4] {aquatic=FALSE} => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [5] {venomous=FALSE} => {airborne=TRUE} 0.2178218 0.2365591 0.9955197

##      lhs      rhs      support
## [1] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [2] {venomous=FALSE,tail=FALSE}    => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 0.9178082 1.203878
## [2] 0.8181818 1.073200
## [1] "Número de reglas con consecuente negado"

##      lhs      rhs      support  confidence
## [1] {type=fish}    => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE} => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE} => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE} => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE} => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE} => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE} => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE} => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE} => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}    => {hair=FALSE} 0.3960396 1.0000000

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## [16] {milk=FALSE,airborne=FALSE} => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE} => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE} => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE} => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE} => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE} => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE} => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE} => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE} => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE} => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE} => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE} => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE} => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE} => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE} => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE} => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE} => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE} => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catsize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE} => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE} => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE} => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE} => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE} => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE} => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE} => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793
## [10] 1.7413793
## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793

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## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}      => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}    => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}     => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}   => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}   => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
##      lift

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## [1] 1.741379
## [2] 1.741379
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,backbone=TRUE}    => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE}     => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
##      lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,domestic=FALSE}   => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE}     => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE}    => {hair=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                     => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE}                 => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE}             => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}            => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE} => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE}        => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}            => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE}           => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE}      => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE}          => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE}          => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE}         => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE}           => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE}          => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}             => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE}        => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE}         => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE}          => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE}              => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE}         => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE}          => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE}           => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE}        => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE}                      => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE}          => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE}      => {hair=FALSE} 0.2079208 0.9545455

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## [27] {predator=TRUE,toothed=FALSE} => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE}   => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE}  => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE}    => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE}  => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE}      => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE}     => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE}                => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE}              => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE} => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE}      => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catsize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE}              => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE}  => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE}               => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE}               => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE}    => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE}               => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE}    => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE}                  => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE}               => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE}               => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE}                   => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE}               => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793
## [10] 1.7413793
## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672

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## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}          => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}        => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}         => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}       => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE}      => {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}       => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE}     => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
##      lift
## [1] 1.741379
## [2] 1.741379
##      lhs                rhs      support  confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE}   => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
##      lift
## [1] 1.741379
## [2] 1.699918

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## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE}  => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE}  => {hair=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}    => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}    => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}  => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}    => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}    => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}     => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}         => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}         => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}        => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}         => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}       => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}  => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}    => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}     => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                    => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}      => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                   => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                     => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                  => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}               => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}     => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}       => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}         => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}          => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}      => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}  => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}     => {aquatic=FALSE} 0.5247525

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## [38] {feathers=FALSE,fins=FALSE}      => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}       => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                    => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}        => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}   => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE}                  => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}                   => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}                     => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}                 => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}                  => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}                       => {aquatic=FALSE} 0.2871287
##      confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690

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## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}                => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}                 => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}            => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}                => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}              => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}                  => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}            => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}             => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}             => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111

##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441

##      lhs                      rhs      support  confidence
## [1] {fins=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}        => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936

##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969

##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441

##      lhs                      rhs      support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}    => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4455446 0.8035714

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## lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE} => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE} => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE} => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE} => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE} => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE} => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE} => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE} => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE} => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE} => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE} => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE} => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE} => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE} => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE} => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE} => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE} => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE} => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE} => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE} => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE} => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE} => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE} => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE} => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE} => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE} => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE} => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.7837838

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## [43] {venomous=FALSE,catsize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE} => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE} => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE} => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE} => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE} => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE} => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE} => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793
## [10] 1.7413793
## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778

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## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}          => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}        => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}         => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}       => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE}     => {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}      => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE}    => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
##      lift
## [1] 1.741379
## [2] 1.741379
##      lhs                rhs      support  confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE}   => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
##      lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
##      lhs                rhs      support  confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE}   => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE}   => {hair=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"

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##	lhs	rhs	support
## [1]	{aquatic=TRUE, catsize=TRUE}	=> {predator=TRUE}	0.1188119
## [2]	{breathes=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.1683168
## [3]	{aquatic=TRUE, fins=FALSE}	=> {predator=TRUE}	0.1584158
## [4]	{airborne=FALSE, aquatic=TRUE}	=> {predator=TRUE}	0.2574257
## [5]	{aquatic=TRUE, legs=TRUE}	=> {predator=TRUE}	0.1485149
## [6]	{feathers=FALSE, aquatic=TRUE}	=> {predator=TRUE}	0.2475248
## [7]	{fins=TRUE, domestic=FALSE}	=> {predator=TRUE}	0.1287129
## [8]	{aquatic=TRUE, breathes=TRUE}	=> {predator=TRUE}	0.1287129
## [9]	{breathes=FALSE}	=> {predator=TRUE}	0.1683168
## [10]	{aquatic=TRUE}	=> {predator=TRUE}	0.2871287
## [11]	{backbone=TRUE, legs=FALSE}	=> {predator=TRUE}	0.1485149
## [12]	{hair=FALSE, toothed=TRUE}	=> {predator=TRUE}	0.1782178
## [13]	{legs=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.1683168
## [14]	{fins=TRUE}	=> {predator=TRUE}	0.1287129
## [15]	{milk=FALSE, toothed=TRUE}	=> {predator=TRUE}	0.1584158
## [16]	{eggs=TRUE, toothed=TRUE}	=> {predator=TRUE}	0.1485149
## [17]	{hair=FALSE, airborne=FALSE}	=> {predator=TRUE}	0.2871287
## [18]	{hair=FALSE, feathers=FALSE}	=> {predator=TRUE}	0.2673267
## [19]	{milk=FALSE, airborne=FALSE}	=> {predator=TRUE}	0.2673267
## [20]	{eggs=TRUE, airborne=FALSE}	=> {predator=TRUE}	0.2574257
## [21]	{airborne=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.4653465
## [22]	{domestic=FALSE, catsize=TRUE}	=> {predator=TRUE}	0.2574257
## [23]	{toothed=TRUE, domestic=FALSE}	=> {predator=TRUE}	0.3465347
## [24]	{airborne=FALSE, toothed=FALSE}	=> {predator=TRUE}	0.1188119
## [25]	{hair=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.3564356
## [26]	{catsize=TRUE}	=> {predator=TRUE}	0.2772277
## [27]	{feathers=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.4455446
## [28]	{backbone=TRUE, domestic=FALSE}	=> {predator=TRUE}	0.4455446
## [29]	{tail=TRUE, domestic=FALSE}	=> {predator=TRUE}	0.4059406
## [30]	{feathers=FALSE, milk=FALSE}	=> {predator=TRUE}	0.2475248
## [31]	{eggs=FALSE, domestic=FALSE}	=> {predator=TRUE}	0.2079208
## [32]	{feathers=FALSE, eggs=TRUE}	=> {predator=TRUE}	0.2376238
## [33]	{feathers=FALSE, backbone=TRUE}	=> {predator=TRUE}	0.3762376
## [34]	{milk=FALSE, tail=TRUE}	=> {predator=TRUE}	0.2376238
## [35]	{feathers=FALSE, tail=TRUE}	=> {predator=TRUE}	0.3267327
## [36]	{eggs=TRUE, backbone=TRUE}	=> {predator=TRUE}	0.2475248
## [37]	{milk=FALSE, backbone=TRUE}	=> {predator=TRUE}	0.2475248
## [38]	{eggs=TRUE, tail=TRUE}	=> {predator=TRUE}	0.2277228
## [39]	{backbone=TRUE}	=> {predator=TRUE}	0.4653465
## [40]	{eggs=FALSE}	=> {predator=TRUE}	0.2277228
## [41]	{venomous=FALSE, tail=FALSE}	=> {predator=TRUE}	0.1188119
## [42]	{legs=TRUE}	=> {predator=TRUE}	0.3861386
## [43]	{hair=TRUE}	=> {predator=TRUE}	0.1980198
## [44]	{aquatic=FALSE}	=> {predator=TRUE}	0.2673267
##	confidence lift		
## [1]	0.9230769	1.6648352	
## [2]	0.8500000	1.5330357	
## [3]	0.8421053	1.5187970	
## [4]	0.8387097	1.5126728	
## [5]	0.8333333	1.5029762	
## [6]	0.8333333	1.5029762	
## [7]	0.8125000	1.4654018	
## [8]	0.8125000	1.4654018	

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## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}   => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}       => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}       => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE}  => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}      => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}    => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667

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## lift
## [1] 1.202381
## lhs rhs support confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
## lift
## [1] 0.9837662
## lhs rhs support confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
## lift
## [1] 1.113971
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228 0.5897436
## lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
## lhs rhs support confidence
## [1] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
## lhs rhs support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381

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## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs          support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs          support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE} => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE} => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE} => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE} => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE} => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE} => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE} => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE} => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139
## [32] {type=bird} => {catsize=FALSE} 0.1386139

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## [33] {feathers=TRUE}          => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE}             => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE}           => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE} => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE}          => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE}         => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE}              => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE}             => {catsize=FALSE} 0.1089109
##      confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769
##      lhs      rhs      support  confidence lift

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```

## [1] {milk=TRUE}      => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}     => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}     => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE} => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}  => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}    => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}    => {catsize=TRUE} 0.1188119 0.2000000 0.4590909
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}  => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.305633
## [2] 1.181287
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,tail=FALSE}    => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}      => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,tail=FALSE}    => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE}  => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}  => {catsize=FALSE} 0.1683168 0.8095238
##      lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support

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## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE} => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE} => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE} => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE} => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE} => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE} => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE} => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE} => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139
## [32] {type=bird} => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE} => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE} => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE} => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE} => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE} => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE} => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE} => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE} => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE} => {catsize=FALSE} 0.1089109
## confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252

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## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769

##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}      => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}     => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}      => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE}   => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}    => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}     => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}     => {catsize=TRUE} 0.1188119 0.2000000 0.4590909

##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}   => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2079208 0.8076923

##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174

##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}   => {catsize=FALSE} 0.1188119 0.6666667

##      lift
## [1] 1.305633
## [2] 1.181287

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##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}      => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE}   => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE}  => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}       => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE}   => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE}   => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE}    => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}       => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE}    => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}    => {catsize=FALSE} 0.1683168 0.8095238
##      lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                      => {feathers=FALSE} 0.1287129
## [2] {fins=TRUE}                       => {feathers=FALSE} 0.1683168
## [3] {backbone=FALSE}                  => {feathers=FALSE} 0.1782178
## [4] {breathes=FALSE}                 => {feathers=FALSE} 0.2079208
## [5] {legs=FALSE}                      => {feathers=FALSE} 0.2277228
## [6] {tail=FALSE}                     => {feathers=FALSE} 0.2574257
## [7] {eggs=FALSE}                     => {feathers=FALSE} 0.4158416
## [8] {hair=TRUE}                      => {feathers=FALSE} 0.4257426
## [9] {airborne=FALSE,catsize=FALSE}   => {feathers=FALSE} 0.3465347
## [10] {airborne=FALSE,predator=FALSE} => {feathers=FALSE} 0.2673267
## [11] {airborne=FALSE}                 => {feathers=FALSE} 0.7227723
## [12] {catsize=TRUE}                   => {feathers=FALSE} 0.3762376
## [13] {predator=TRUE}                   => {feathers=FALSE} 0.4653465
## [14] {aquatic=TRUE}                   => {feathers=FALSE} 0.2970297
## [15] {aquatic=FALSE}                   => {feathers=FALSE} 0.5049505
## [16] {predator=FALSE}                  => {feathers=FALSE} 0.3366337
## [17] {catsize=FALSE}                   => {feathers=FALSE} 0.4257426
## [18] {breathes=TRUE}                   => {feathers=FALSE} 0.5940594
## [19] {legs=TRUE}                       => {feathers=FALSE} 0.5742574
## [20] {milk=FALSE}                      => {feathers=FALSE} 0.3960396
## [21] {eggs=TRUE}                       => {feathers=FALSE} 0.3861386
## [22] {hair=FALSE}                      => {feathers=FALSE} 0.3762376

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## [23] {toothed=FALSE} => {feathers=FALSE} 0.1980198
##      confidence lift
## [1] 1.0000000 1.2469136
## [2] 1.0000000 1.2469136
## [3] 1.0000000 1.2469136
## [4] 1.0000000 1.2469136
## [5] 1.0000000 1.2469136
## [6] 1.0000000 1.2469136
## [7] 1.0000000 1.2469136
## [8] 1.0000000 1.2469136
## [9] 0.9722222 1.2122771
## [10] 0.9642857 1.2023810
## [11] 0.9480519 1.1821388
## [12] 0.8636364 1.0768799
## [13] 0.8392857 1.0465168
## [14] 0.8333333 1.0390947
## [15] 0.7846154 0.9783476
## [16] 0.7555556 0.9421125
## [17] 0.7543860 0.9406541
## [18] 0.7500000 0.9351852
## [19] 0.7435897 0.9271921
## [20] 0.6666667 0.8312757
## [21] 0.6610169 0.8242310
## [22] 0.6551724 0.8169434
## [23] 0.5000000 0.6234568
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {feathers=TRUE} 0.1980198 1.0000000 5.0500000
## [2] {hair=FALSE} => {feathers=TRUE} 0.1980198 0.3448276 1.7413793
## [3] {aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [4] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [5] {domestic=FALSE} => {feathers=TRUE} 0.1683168 0.1931818 0.9755682
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.8285714

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## [22] {toothed=TRUE,fins=FALSE}      => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE}   => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catsize=TRUE}   => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE}        => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE}       => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catsize=TRUE}   => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE}      => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE}   => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE}      => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE}   => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE}       => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE}                 => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE}  => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE}       => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE}  => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}      => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}     => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}          => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE}  => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}     => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}      => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE}  => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}      => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}          => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}       => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}      => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}      => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE}  => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}      => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}               => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}     => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}  => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}               => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372

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[2] 2.3488372
[3] 2.3488372
[4] 2.3488372
[5] 2.3488372
[6] 2.3488372
[7] 2.3488372
[8] 2.3488372
[9] 2.3488372
[10] 2.2870257
[11] 2.2835917
[12] 2.2342598
[13] 2.2342598
[14] 2.2313953
[15] 2.2252142
[16] 2.1769711
[17] 2.1634027
[18] 2.1251384
[19] 2.0692137
[20] 1.9699925
[21] 1.9461794
[22] 1.9217759
[23] 1.8990599
[24] 1.8594961
[25] 1.8543452
[26] 1.8409805
[27] 1.8268734
[28] 1.8067979
[29] 1.7961696
[30] 1.7616279
[31] 1.7008821
[32] 1.6850354
[33] 1.6833333
[34] 1.5889193
[35] 1.5658915
[36] 1.5658915
[37] 1.5519103
[38] 1.5511189
[39] 1.5267442
[40] 1.5047238
[41] 1.4632101
[42] 1.4540421
[43] 1.4380636
[44] 1.4313227
[45] 1.4260797
[46] 1.4247045
[47] 1.4093023
[48] 1.3946221
[49] 1.3852117
[50] 1.3701550
[51] 1.3598531
[52] 1.3513858
[53] 1.3370304
[54] 1.3276036
[55] 1.3192099

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## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}       => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}      => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}     => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}      => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}      => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}      => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}     => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}     => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}          => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}    => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}      => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106

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## [3] {breathes=TRUE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs rhs support confidence
## [1] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs rhs support confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000

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## [3] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059

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## [30] {predator=FALSE,catsize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE} => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE} => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE} => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372

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[10] 2.2870257
[11] 2.2835917
[12] 2.2342598
[13] 2.2342598
[14] 2.2313953
[15] 2.2252142
[16] 2.1769711
[17] 2.1634027
[18] 2.1251384
[19] 2.0692137
[20] 1.9699925
[21] 1.9461794
[22] 1.9217759
[23] 1.8990599
[24] 1.8594961
[25] 1.8543452
[26] 1.8409805
[27] 1.8268734
[28] 1.8067979
[29] 1.7961696
[30] 1.7616279
[31] 1.7008821
[32] 1.6850354
[33] 1.6833333
[34] 1.5889193
[35] 1.5658915
[36] 1.5658915
[37] 1.5519103
[38] 1.5511189
[39] 1.5267442
[40] 1.5047238
[41] 1.4632101
[42] 1.4540421
[43] 1.4380636
[44] 1.4313227
[45] 1.4260797
[46] 1.4247045
[47] 1.4093023
[48] 1.3946221
[49] 1.3852117
[50] 1.3701550
[51] 1.3598531
[52] 1.3513858
[53] 1.3370304
[54] 1.3276036
[55] 1.3192099
[56] 1.3176404
[57] 1.3176404
[58] 1.3167724
[59] 1.2840310
[60] 1.2774378
[61] 1.2739456
[62] 1.2706824
[63] 1.2696417

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## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}      => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}     => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}    => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}     => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}     => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}     => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}    => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}    => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}         => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}    => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667

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## [11] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}      => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs      rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}    => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}     => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}   => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}  => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}  => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}  => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs      rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE}    => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal}  => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}   => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}    => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}    => {hair=TRUE} 0.2970297 0.6122449

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## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,toothed=TRUE} => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal} => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal} => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE} => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE} => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal} => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE} => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE} => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE} => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE} => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE} => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE} => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE} => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE} => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE} => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE} => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE} => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE} => {eggs=FALSE} 0.3069307 0.6326531

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## [38] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE} => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE} => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE} => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE} => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE} => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE} => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE} => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE} => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE} => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE} => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE} => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE} => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552

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## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}     => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}         => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}      => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}        => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}          => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}          => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}           => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}       => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}       => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524

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## [2] 1.514109
## [3] 1.356532
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}     => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}      => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}     => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}    => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}        => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                     => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                   => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}       => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}      => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}       => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}     => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}   => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}       => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}  => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}  => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}  => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333

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## [31] {toothed=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}      => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}  => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}     => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}         => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}     => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770

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## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}     => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE} => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE} => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE} => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}    => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE} => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}   => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}     => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}    => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}      => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE} => {eggs=TRUE} 0.3267327 0.5892857 1.0087772

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## [13] {catsize=TRUE}    => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}    => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}    => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}    => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}   => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                   => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                 => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}     => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}    => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}     => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}  => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}       => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}  => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7560976

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## [24] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}    => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}     => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}     => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}     => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}               => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932

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## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}     => {eggs=TRUE} 0.1980198 0.9523810 1.6303471

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## [6] {hair=FALSE}      => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}   => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}    => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}      => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}       => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}        => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}   => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}    => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE}          => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE}         => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE}                => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}          => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE}                  => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE}   => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE}      => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE}       => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE}     => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE}      => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE}         => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE}       => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE}      => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE}     => {catsize=FALSE} 0.3168317

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## [17] {hair=FALSE,predator=FALSE}    => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE}         => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE}       => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE}      => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE}          => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE}                   => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE}        => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE}       => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE}     => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE}                    => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE}          => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE}                   => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE}               => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE}       => {catsize=FALSE} 0.1386139
## [32] {type=bird}                    => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE}                 => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE}                   => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE}        => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE}                  => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE}     => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE}                 => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE}                => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE}                     => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE}                    => {catsize=FALSE} 0.1089109
##      confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676

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## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769

##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}      => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}     => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}      => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE}   => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}    => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}     => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}     => {catsize=TRUE} 0.1188119 0.2000000 0.4590909

##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}  => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923

##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174

##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119 0.6666667

##      lift
## [1] 1.305633
## [2] 1.181287

##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,tail=FALSE}    => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE}  => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}      => {catsize=FALSE} 0.2772277 0.7777778

##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168

##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,tail=FALSE}    => {catsize=FALSE} 0.1881188 0.9500000

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## [2] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168 0.8095238
## lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {hair=TRUE,eggs=FALSE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE} => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE} => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE} => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE} => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE} => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE} => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE} => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE} => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE} => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377

```



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## [39] {feathers=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}  => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}               => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151

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[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180
[61] 1.346667
[62] 1.336089
[63] 1.316071
[64] 1.300136
[65] 1.282325
[66] 1.278481
[67] 1.269032
[68] 1.264997
[69] 1.246914
[70] 1.214359
[71] 1.183719
[72] 1.088486

```

## [73] 0.967770
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}    => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE} => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE} => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}     => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}    => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE} => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}    => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}  => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}   => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}    => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE} => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}    => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}     => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}  => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE} => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}  => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}     => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE}   => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
##      lhs      rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}         => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}    => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.4929577

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```

## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992

```

```

## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}    => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}   => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}      => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}     => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}     => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}        => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}    => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}     => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}  => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}    => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544

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```

## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE} => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE} => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331

```

[13] 2.398588
[14] 2.343248
[15] 2.268935
[16] 2.246055
[17] 2.181882
[18] 2.170151
[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180
[61] 1.346667
[62] 1.336089
[63] 1.316071
[64] 1.300136
[65] 1.282325
[66] 1.278481

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## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}    => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE} => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE} => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}     => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}    => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE} => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}    => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}  => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}   => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}    => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}  => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}    => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}     => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}  => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE} => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}   => {milk=FALSE} 0.2079208 0.3442623 0.5795082

##      lhs      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619

##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}     => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE}   => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719

##      lhs      rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}        => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449

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## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}   => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}=> {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}=> {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090

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## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}  => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}          => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}         => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}       => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}       => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}          => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}          => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}          => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}             => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}         => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}          => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}        => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}             => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}         => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}       => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}         => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}         => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}           => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}       => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}       => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}       => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}          => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}      => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}           => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}      => {milk=TRUE} 0.3168317 0.7804878

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## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                 => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}               => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415

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[7] 2.463415
[8] 2.463415
[9] 2.463415
[10] 2.463415
[11] 2.403331
[12] 2.403331
[13] 2.398588
[14] 2.343248
[15] 2.268935
[16] 2.246055
[17] 2.181882
[18] 2.170151
[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180

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## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}     => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}  => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE} => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}      => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}    => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE} => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}    => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}  => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}   => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}    => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE} => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}    => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}     => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE} => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE} => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}  => {milk=FALSE} 0.2079208 0.3442623 0.5795082

##      lhs      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619

##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}     => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE}   => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005

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## [6] 1.336089
## [7] 1.183719
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}  => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}       => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}  => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
##      lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,backbone=TRUE}  => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
##      lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926

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## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}     => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {hair=TRUE,eggs=FALSE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}     => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}    => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}     => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}       => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}   => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}    => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}   => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}  => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}     => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053

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## [21] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}   => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}      => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                 => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}  => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}   => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}     => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}   => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}   => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE}  => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}          => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE}  => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE}  => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}      => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}                => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                => {milk=TRUE} 0.2178218 0.3928571
## lift

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```
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
```

```

## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770

##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}           => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}         => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}      => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}         => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}       => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}        => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}         => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}      => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}         => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}          => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}       => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}      => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}       => {milk=FALSE} 0.2079208 0.3442623 0.5795082

##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619

##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195

```

```

## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526

```

```

## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {hair=TRUE,eggs=FALSE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE} => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE} => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE} => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE} => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.9512195

```

```

## [15] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}      => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}   => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}      => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                  => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}  => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}   => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}     => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}   => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}   => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE}  => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}          => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE}  => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE}  => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}      => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5135135

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## [69] {feathers=FALSE}          => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}          => {milk=TRUE} 0.2178218 0.3928571
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992

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## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}     => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}    => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}       => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}        => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}    => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818

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## [2] {fins=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}=> {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE}    => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}=> {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}=> {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}  => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}     => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}=> {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE}=> {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE}=> {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE}=> {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE}=> {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE}=> {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}   => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE}=> {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE}=> {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768

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## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}        => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}    => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}        => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}       => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}         => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}        => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}        => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}        => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}      => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                      => {catsize=TRUE} 0.3168317

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## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE} => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE} => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE} => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE} => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE} => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE} => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE} => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE} => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE} => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE} => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE} => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE} => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE} => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE} => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE} => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE} => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE} => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE} => {catsize=TRUE} 0.1188119

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##		confidence	lift
##	[1]	0.9090909	2.0867769
##	[2]	0.9090909	2.0867769
##	[3]	0.9000000	2.0659091
##	[4]	0.8260870	1.8962451
##	[5]	0.8108108	1.8611794
##	[6]	0.7878788	1.8085399
##	[7]	0.7878788	1.8085399
##	[8]	0.7804878	1.7915743
##	[9]	0.7804878	1.7915743
##	[10]	0.7750000	1.7789773
##	[11]	0.7692308	1.7657343
##	[12]	0.7575758	1.7389807
##	[13]	0.7560976	1.7355876
##	[14]	0.7380952	1.6942641
##	[15]	0.7317073	1.6796009
##	[16]	0.7058824	1.6203209
##	[17]	0.6976744	1.6014799
##	[18]	0.6842105	1.5705742
##	[19]	0.6666667	1.5303030
##	[20]	0.6595745	1.5140232
##	[21]	0.6428571	1.4756494
##	[22]	0.6304348	1.4471344
##	[23]	0.6296296	1.4452862
##	[24]	0.6216216	1.4269042
##	[25]	0.6153846	1.4125874
##	[26]	0.6140351	1.4094896
##	[27]	0.6136364	1.4085744
##	[28]	0.5964912	1.3692185
##	[29]	0.5925926	1.3602694
##	[30]	0.5897436	1.3537296
##	[31]	0.5873016	1.3481241
##	[32]	0.5849057	1.3426244
##	[33]	0.5818182	1.3355372
##	[34]	0.5769231	1.3243007
##	[35]	0.5744681	1.3186654
##	[36]	0.5652174	1.2974308
##	[37]	0.5633803	1.2932138
##	[38]	0.5625000	1.2911932
##	[39]	0.5614035	1.2886762
##	[40]	0.5573770	1.2794337
##	[41]	0.5510204	1.2648423
##	[42]	0.5500000	1.2625000
##	[43]	0.5500000	1.2625000
##	[44]	0.5476190	1.2570346
##	[45]	0.5400000	1.2395455
##	[46]	0.5384615	1.2360140
##	[47]	0.5344828	1.2268809
##	[48]	0.5319149	1.2209865
##	[49]	0.5316456	1.2203682
##	[50]	0.5303030	1.2172865
##	[51]	0.5294118	1.2152406
##	[52]	0.5254237	1.2060863
##	[53]	0.5211268	1.1962228

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## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}    => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}     => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}    => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}     => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}  => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}    => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}     => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}   => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}    => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348

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## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}     => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}    => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}   => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                   => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                 => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}     => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}    => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}     => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}  => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.8510638

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## [17] {toothed=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}         => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}        => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}   => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}   => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}    => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}   => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE}   => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}        => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}    => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}        => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}         => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}    => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE}  => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}            => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}         => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE}    => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}     => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}        => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}            => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE}   => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE}   => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE}   => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}    => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}    => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}        => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}    => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                   => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109

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[8] 2.343101
[9] 2.339768
[10] 2.331890
[11] 2.324603
[12] 2.284524
[13] 2.214912
[14] 2.129932
[15] 2.118481
[16] 2.046606
[17] 2.022186
[18] 2.016897
[19] 1.961779
[20] 1.911477
[21] 1.903770
[22] 1.819820
[23] 1.818235
[24] 1.803571
[25] 1.803571
[26] 1.777433
[27] 1.697479
[28] 1.687552
[29] 1.674745
[30] 1.643254
[31] 1.618590
[32] 1.603175
[33] 1.588050
[34] 1.575534
[35] 1.574026
[36] 1.565004
[37] 1.521380
[38] 1.514109
[39] 1.460034
[40] 1.442857
[41] 1.442857
[42] 1.434419
[43] 1.427827
[44] 1.394065
[45] 1.392231
[46] 1.390253
[47] 1.379781
[48] 1.379781
[49] 1.356532
[50] 1.348124
[51] 1.345036
[52] 1.343838
[53] 1.317678
[54] 1.317678
[55] 1.287056
[56] 1.282540
[57] 1.269180
[58] 1.238817
[59] 1.217601
[60] 1.202381
[61] 1.187894

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## [62] 1.124304
##      lhs                rhs          support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}          => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}      => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}     => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}    => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}         => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}     => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}       => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}        => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}        => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}         => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}     => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}      => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs          support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs          support  confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs          support  confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}   => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE}      => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal}  => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal}      => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal}     => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000

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## [10] {eggs=FALSE,legs=TRUE}	=> {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE}	=> {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE}	=> {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal}	=> {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE}	=> {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE}	=> {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE}	=> {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE}	=> {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE}	=> {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE}	=> {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE}	=> {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE}	=> {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE}	=> {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE}	=> {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE}	=> {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE}	=> {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE}	=> {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE}	=> {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE}	=> {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE}	=> {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE}	=> {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE}	=> {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE}	=> {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE}	=> {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE}	=> {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE}	=> {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE}	=> {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE}	=> {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE}	=> {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE}	=> {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE}	=> {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE}	=> {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE}	=> {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE}	=> {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE}	=> {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE}	=> {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE}	=> {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE}	=> {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE}	=> {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}	=> {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}	=> {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}	=> {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}	=> {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE}	=> {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}	=> {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE}	=> {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE}	=> {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}	=> {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}	=> {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE}	=> {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}	=> {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}	=> {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}	=> {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}	=> {hair=TRUE} 0.3960396 0.5405405

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## [64] {breathes=TRUE,fins=FALSE}      => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE}    => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE}    => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}        => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}                  => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}        => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}     => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                   => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}        => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}                  => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636

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## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}       => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}      => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}     => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}      => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}      => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}      => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}     => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}     => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}          => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}     => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}      => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709

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## lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
## lhs rhs support confidence
## [1] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs rhs support confidence
## [1] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214

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## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal}    => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE}    => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE}     => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE}     => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}         => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}         => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                     => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}          => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}           => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}           => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}          => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}           => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}          => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}               => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}              => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}              => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}              => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}             => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}              => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}             => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}           => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}          => {toothed=FALSE} 0.3168317

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## [18] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}  => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}   => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}    => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}     => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                 => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}              => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}  => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}   => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}              => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231

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## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}     => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}  => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}       => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}  => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}   => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}    => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}   => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}  => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}  => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}     => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}      => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168

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## [3] {fins=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
## lhs rhs support confidence
## [1] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
## lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
## lhs rhs support
## [1] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}    => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}    => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634

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## [7] 1.480172
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}     => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}     => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}  => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE}  => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}  => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                     => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}          => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}           => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}           => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}          => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}           => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}          => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}               => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}               => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}               => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}               => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}              => {toothed=FALSE} 0.1683168

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## [14] {eggs=TRUE,fins=FALSE}      => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}  => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}   => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}    => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}     => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                 => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}              => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}  => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}   => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}              => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949

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## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}  => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}       => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}   => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}    => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}   => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}  => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}  => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}      => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}      => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632

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## [2] 1.683333
##      lhs                                rhs                                support
## [1] {tail=FALSE,domestic=FALSE}      => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}     => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}      => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                                rhs                                support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}      => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}       => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}       => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                rhs                                support  confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}        => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805

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## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs          support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}     => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}     => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}  => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs          support  confidence
## [1] {eggs=TRUE,airborne=TRUE}  => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}  => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}  => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support  confidence
## [1] {hair=TRUE,eggs=FALSE}       => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}     => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}   => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}   => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}      => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}         => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}    => {milk=TRUE} 0.3663366 1.0000000

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## [10] {hair=TRUE,backbone=TRUE}      => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}    => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}     => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}   => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}     => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}       => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466

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## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645

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## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}     => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}    => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}       => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}        => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}    => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}     => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift

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## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}        => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}        => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}    => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.4929577
##      lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,backbone=TRUE}    => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
##      lift
## [1] 2.463415
## [2] 2.403331

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## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                        => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE}                        => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}         => {toothed=TRUE} 0.1386139

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## [4] {backbone=TRUE,breathes=FALSE} => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE} => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE} => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE} => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE} => {toothed=TRUE} 0.4059406
## [9] {hair=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE} => {toothed=TRUE} 0.3564356
## [11] {hair=TRUE,tail=TRUE} => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE} => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE} => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE} => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE} => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE} => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE} => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE} => {toothed=TRUE} 0.5841584
## [23] {airborne=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE} => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE} => {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE} => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [33] {aquatic=TRUE,backbone=TRUE} => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE} => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE} => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE} => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE} => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE} => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE} => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE} => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE} => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE} => {toothed=TRUE} 0.2376238
## [46] {catsize=FALSE} => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE} => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE} => {toothed=TRUE} 0.1980198
## confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154

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## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508
## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216
## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368
## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488
## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670

##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}   => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}    => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE} => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964

##      lhs      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}     => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE}  => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE}  => {toothed=TRUE} 0.2673267 0.6923077

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## lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092
## [5] 1.165149
## [6] 1.146280
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE} => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE} => {toothed=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE} => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE} => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE} => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE} => {toothed=TRUE} 0.4059406
## [9] {hair=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE} => {toothed=TRUE} 0.3564356
## [11] {hair=TRUE,tail=TRUE} => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE} => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE} => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE} => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE} => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE} => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE} => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE} => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE} => {toothed=TRUE} 0.5841584
## [23] {airborne=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE} => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE} => {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE} => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE} => {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [33] {aquatic=TRUE,backbone=TRUE} => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE} => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE} => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE} => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE} => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE} => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE} => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE} => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE} => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE} => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE} => {toothed=TRUE} 0.2376238

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## [46] {catsize=FALSE}          => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE}              => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE}                => {toothed=TRUE} 0.1980198
##      confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154
## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508
## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216
## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368
## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488
## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000

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## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}    => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}    => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE} => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}            => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE}        => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE}         => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}             => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE}         => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE}         => {toothed=TRUE} 0.2673267 0.6923077
##      lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092
## [5] 1.165149
## [6] 1.146280
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}              => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}              => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}             => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}            => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}               => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                           => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                        => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}             => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}            => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}                => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}              => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}             => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}           => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}            => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}               => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}           => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}              => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}            => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}           => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}           => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}          => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}               => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}           => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}          => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}              => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}          => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}          => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}           => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}          => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE}          => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}               => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}              => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}          => {eggs=FALSE} 0.3465347 0.6603774

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## [34] {feathers=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}    => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE}   => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE}    => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}     => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}            => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}         => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE}    => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}         => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}     => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}        => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}            => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE}   => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE}   => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE}   => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}    => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}    => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}        => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}     => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                   => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}       => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571

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## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}   => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}   => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}  => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}       => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}   => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}     => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}       => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}      => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}       => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}   => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}    => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000

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## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
## lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
## lhs rhs support confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {hair=TRUE,eggs=FALSE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE} => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE} => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE} => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE} => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE} => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE} => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7804878

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## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                 => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE}=> {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE}=> {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE}=> {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE}=> {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE}=> {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE}=> {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}               => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415

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[7] 2.463415
[8] 2.463415
[9] 2.463415
[10] 2.463415
[11] 2.403331
[12] 2.403331
[13] 2.398588
[14] 2.343248
[15] 2.268935
[16] 2.246055
[17] 2.181882
[18] 2.170151
[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180

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## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}     => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}          => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}       => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}      => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}            => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}          => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}       => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}          => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}        => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}          => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}           => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}        => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}           => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}            => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}        => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}        => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}          => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}        => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005

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## [6] 1.336089
## [7] 1.183719
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}  => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}  => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}     => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
##      lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,backbone=TRUE}  => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}    => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
##      lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926

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## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs          rhs          support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}   => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}       => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs          rhs          support
## [1] {type=fish}      => {backbone=TRUE} 0.1287129
## [2] {fins=TRUE}      => {backbone=TRUE} 0.1683168
## [3] {type=bird}      => {backbone=TRUE} 0.1980198
## [4] {feathers=TRUE}  => {backbone=TRUE} 0.1980198
## [5] {milk=TRUE}      => {backbone=TRUE} 0.4059406
## [6] {type=mammal}    => {backbone=TRUE} 0.4059406
## [7] {toothed=TRUE}   => {backbone=TRUE} 0.6039604
## [8] {venomous=FALSE,domestic=TRUE} => {backbone=TRUE} 0.1188119
## [9] {aquatic=TRUE,tail=TRUE}      => {backbone=TRUE} 0.2574257
## [10] {aquatic=TRUE,breathes=TRUE} => {backbone=TRUE} 0.1584158
## [11] {hair=TRUE,predator=TRUE}     => {backbone=TRUE} 0.1980198
## [12] {hair=TRUE,tail=TRUE}        => {backbone=TRUE} 0.3267327
## [13] {predator=FALSE,catsize=TRUE} => {backbone=TRUE} 0.1584158
## [14] {tail=TRUE,catsize=TRUE}      => {backbone=TRUE} 0.3762376
## [15] {venomous=FALSE,tail=TRUE}    => {backbone=TRUE} 0.7029703
## [16] {tail=TRUE}              => {backbone=TRUE} 0.7326733
## [17] {catsize=TRUE}           => {backbone=TRUE} 0.4257426
## [18] {predator=TRUE,breathes=TRUE} => {backbone=TRUE} 0.3663366
## [19] {domestic=TRUE}          => {backbone=TRUE} 0.1188119
## [20] {hair=TRUE,domestic=FALSE}    => {backbone=TRUE} 0.3069307

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## [21] {airborne=FALSE,breathes=TRUE} => {backbone=TRUE} 0.5049505
## [22] {breathes=TRUE,venomous=FALSE} => {backbone=TRUE} 0.6633663
## [23] {aquatic=FALSE,predator=TRUE} => {backbone=TRUE} 0.2376238
## [24] {airborne=FALSE,aquatic=FALSE} => {backbone=TRUE} 0.3960396
## [25] {breathes=TRUE} => {backbone=TRUE} 0.6831683
## [26] {predator=TRUE,venomous=FALSE} => {backbone=TRUE} 0.4257426
## [27] {airborne=FALSE,venomous=FALSE} => {backbone=TRUE} 0.6039604
## [28] {airborne=FALSE,predator=FALSE} => {backbone=TRUE} 0.2376238
## [29] {airborne=FALSE,legs=TRUE} => {backbone=TRUE} 0.4554455
## [30] {legs=FALSE} => {backbone=TRUE} 0.1881188
## [31] {legs=TRUE} => {backbone=TRUE} 0.6336634
## [32] {aquatic=FALSE} => {backbone=TRUE} 0.5247525
## [33] {predator=FALSE} => {backbone=TRUE} 0.3564356
## [34] {feathers=FALSE} => {backbone=TRUE} 0.6237624
## [35] {airborne=TRUE} => {backbone=TRUE} 0.1782178
## [36] {eggs=TRUE} => {backbone=TRUE} 0.4158416
## [37] {catsize=FALSE} => {backbone=TRUE} 0.3960396
## [38] {breathes=FALSE} => {backbone=TRUE} 0.1386139
## [39] {toothed=FALSE} => {backbone=TRUE} 0.2178218
## confidence lift
## [1] 1.0000000 1.2168675
## [2] 1.0000000 1.2168675
## [3] 1.0000000 1.2168675
## [4] 1.0000000 1.2168675
## [5] 1.0000000 1.2168675
## [6] 1.0000000 1.2168675
## [7] 1.0000000 1.2168675
## [8] 1.0000000 1.2168675
## [9] 1.0000000 1.2168675
## [10] 1.0000000 1.2168675
## [11] 1.0000000 1.2168675
## [12] 1.0000000 1.2168675
## [13] 1.0000000 1.2168675
## [14] 1.0000000 1.2168675
## [15] 1.0000000 1.2168675
## [16] 0.9866667 1.2006426
## [17] 0.9772727 1.1892114
## [18] 0.9487179 1.1544640
## [19] 0.9230769 1.1232623
## [20] 0.9117647 1.1094968
## [21] 0.9107143 1.1082186
## [22] 0.8933333 1.0870683
## [23] 0.8888889 1.0816600
## [24] 0.8695652 1.0581456
## [25] 0.8625000 1.0495482
## [26] 0.8600000 1.0465060
## [27] 0.8591549 1.0454777
## [28] 0.8571429 1.0430293
## [29] 0.8518519 1.0365908
## [30] 0.8260870 1.0052383
## [31] 0.8205128 0.9984554
## [32] 0.8153846 0.9922150
## [33] 0.8000000 0.9734940
## [34] 0.7777778 0.9464525

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## [35] 0.7500000 0.9126506
## [36] 0.7118644 0.8662446
## [37] 0.7017544 0.8539421
## [38] 0.6666667 0.8112450
## [39] 0.5500000 0.6692771
##      lhs                      rhs          support  confidence lift
## [1] {toothed=FALSE} => {backbone=FALSE} 0.1782178 0.4500000 2.525000
## [2] {eggs=TRUE}      => {backbone=FALSE} 0.1683168 0.2881356 1.616761
## [3] {aquatic=FALSE} => {backbone=FALSE} 0.1188119 0.1846154 1.035897
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,predator=TRUE} => {backbone=TRUE} 0.2376238 0.8888889
## [2] {airborne=FALSE,aquatic=FALSE} => {backbone=TRUE} 0.3960396 0.8695652
##      lift
## [1] 1.081660
## [2] 1.058146
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=bird}                  => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}               => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}   => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}    => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}    => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}    => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}    => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}   => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}        => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}        => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}        => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}       => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}       => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}     => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}       => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}   => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}     => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}    => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}   => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}      => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                  => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}   => {toothed=FALSE} 0.3267327

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## [38] {hair=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                  => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}      => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}      => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}       => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}       => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                  => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456

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## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}     => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}    => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}    => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}   => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}     => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE} => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}    => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}     => {toothed=TRUE} 0.1980198 0.3389831 0.5612670

##      lhs      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333

##      lhs      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838

##      lhs      rhs      support  confidence
## [1] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795

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## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                                rhs                                support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}      => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}        => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}        => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923  2.039423
## [2] 0.8076923  2.039423
## [3] 0.7727273  1.951136
## [4] 0.5862069  1.480172
## [5] 0.5121951  1.293293
## [6] 0.5000000  1.262500
## [7] 0.4871795  1.230128
##      lhs                                rhs                                support  confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs                                support  confidence
## [1] {hair=FALSE,airborne=TRUE}      => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}        => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}            => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}           => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}           => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}       => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}       => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}       => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404

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## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}      => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}     => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}      => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {milk=FALSE} 0.1287129 1.0000000
## [2] {backbone=FALSE}                  => {milk=FALSE} 0.1782178 1.0000000
## [3] {type=bird}                       => {milk=FALSE} 0.1980198 1.0000000
## [4] {feathers=TRUE}                   => {milk=FALSE} 0.1980198 1.0000000
## [5] {breathes=FALSE}                  => {milk=FALSE} 0.2079208 1.0000000
## [6] {legs=FALSE,catsize=FALSE}         => {milk=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}             => {milk=FALSE} 0.1881188 1.0000000
## [8] {hair=FALSE,airborne=TRUE}         => {milk=FALSE} 0.1782178 1.0000000
## [9] {hair=FALSE,tail=FALSE}           => {milk=FALSE} 0.1584158 1.0000000
## [10] {aquatic=TRUE,catsize=FALSE}        => {milk=FALSE} 0.2277228 1.0000000
## [11] {toothed=FALSE,catsize=FALSE}       => {milk=FALSE} 0.3069307 1.0000000
## [12] {hair=FALSE,toothed=FALSE}          => {milk=FALSE} 0.3465347 1.0000000
## [13] {hair=FALSE,predator=FALSE}         => {milk=FALSE} 0.2178218 1.0000000
## [14] {hair=FALSE,catsize=FALSE}          => {milk=FALSE} 0.4356436 1.0000000
## [15] {eggs=TRUE,catsize=FALSE}           => {milk=FALSE} 0.4554455 1.0000000
## [16] {hair=FALSE,eggs=TRUE}              => {milk=FALSE} 0.5346535 1.0000000
## [17] {hair=FALSE,aquatic=FALSE}          => {milk=FALSE} 0.2574257 1.0000000
## [18] {hair=FALSE,legs=TRUE}              => {milk=FALSE} 0.3564356 1.0000000
## [19] {hair=FALSE,fins=FALSE}             => {milk=FALSE} 0.4257426 1.0000000
## [20] {eggs=TRUE,toothed=TRUE}            => {milk=FALSE} 0.1980198 1.0000000
## [21] {eggs=TRUE,aquatic=FALSE}           => {milk=FALSE} 0.2871287 1.0000000
## [22] {eggs=TRUE}                        => {milk=FALSE} 0.5742574 0.9830508
## [23] {hair=FALSE}                       => {milk=FALSE} 0.5544554 0.9655172
## [24] {predator=TRUE,catsize=FALSE}        => {milk=FALSE} 0.2574257 0.9285714
## [25] {airborne=TRUE}                     => {milk=FALSE} 0.2178218 0.9166667
## [26] {aquatic=TRUE,fins=FALSE}            => {milk=FALSE} 0.1683168 0.8947368
## [27] {legs=FALSE}                       => {milk=FALSE} 0.1980198 0.8695652
## [28] {domestic=FALSE,catsize=FALSE}       => {milk=FALSE} 0.4257426 0.8600000
## [29] {aquatic=TRUE}                     => {milk=FALSE} 0.2970297 0.8333333
## [30] {tail=FALSE,domestic=FALSE}         => {milk=FALSE} 0.1881188 0.8260870
## [31] {tail=FALSE}                       => {milk=FALSE} 0.1980198 0.7692308
## [32] {fins=TRUE}                        => {milk=FALSE} 0.1287129 0.7647059
## [33] {predator=TRUE}                    => {milk=FALSE} 0.3366337 0.6071429

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## [34] {fins=FALSE}          => {milk=FALSE} 0.4653465 0.5595238
## [35] {tail=TRUE}           => {milk=FALSE} 0.3960396 0.5333333
## [36] {backbone=TRUE}       => {milk=FALSE} 0.4158416 0.5060241
## [37] {aquatic=FALSE}      => {milk=FALSE} 0.2970297 0.4615385
## [38] {toothed=TRUE}        => {milk=FALSE} 0.2079208 0.3442623
##      lift
## [1] 1.6833333
## [2] 1.6833333
## [3] 1.6833333
## [4] 1.6833333
## [5] 1.6833333
## [6] 1.6833333
## [7] 1.6833333
## [8] 1.6833333
## [9] 1.6833333
## [10] 1.6833333
## [11] 1.6833333
## [12] 1.6833333
## [13] 1.6833333
## [14] 1.6833333
## [15] 1.6833333
## [16] 1.6833333
## [17] 1.6833333
## [18] 1.6833333
## [19] 1.6833333
## [20] 1.6833333
## [21] 1.6833333
## [22] 1.6548023
## [23] 1.6252874
## [24] 1.5630952
## [25] 1.5430556
## [26] 1.5061404
## [27] 1.4637681
## [28] 1.4476667
## [29] 1.4027778
## [30] 1.3905797
## [31] 1.2948718
## [32] 1.2872549
## [33] 1.0220238
## [34] 0.9418651
## [35] 0.8977778
## [36] 0.8518072
## [37] 0.7769231
## [38] 0.5795082
##      lhs                rhs          support  confidence lift
## [1] {toothed=TRUE}    => {milk=TRUE} 0.3960396 0.6557377 1.615354
## [2] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728 1.246914
## [3] {predator=TRUE}   => {milk=TRUE} 0.2178218 0.3928571 0.967770
##      lhs                rhs          support  confidence lift
## [1] {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1 1.683333
##      lhs                rhs          support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {milk=FALSE} 0.2574257 0.9285714
##      lift
## [1] 1.563095

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE}          => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE}          => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE}                => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}           => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE}       => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE}                   => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE}     => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE}        => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE}         => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE}        => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE}        => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE}           => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE}         => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE}         => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE}         => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE}        => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE}            => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE}          => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE}         => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE}             => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE}                      => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE}           => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE}          => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE}        => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE}                       => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE}    => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE}             => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE}                      => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE}                  => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE}          => {catsize=FALSE} 0.1386139
## [32] {type=bird}                       => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE}                    => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE}                      => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE}           => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE}    => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE}                     => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE}        => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE}                    => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE}                   => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE}                        => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE}                       => {catsize=FALSE} 0.1089109
##      confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404

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## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769

##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}   => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}    => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}     => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE} => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}  => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}    => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}    => {catsize=TRUE} 0.1188119 0.2000000 0.4590909

##      lhs      rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}   => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174

##      lhs      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}   => {catsize=FALSE} 0.1188119 0.6666667
##      lift

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## [1] 1.305633
## [2] 1.181287
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}      => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE}  => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE}  => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}       => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE}   => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}    => {catsize=FALSE} 0.1683168 0.8095238
##      lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}      => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}     => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}    => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}        => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                    => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                 => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}       => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}      => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}       => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}     => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718

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## [21] {predator=FALSE,toothed=TRUE} => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}     => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}    => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}    => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}        => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}     => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}     => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}    => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}    => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}              => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603

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## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}  => {eggs=TRUE} 0.1980198 1.0000000 1.7118644

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## [3] {feathers=TRUE} => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE} => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE} => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE} => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE} => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE} => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE} => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE} => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE} => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE} => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE} => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}     => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}        => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}          => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}      => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                 => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                   => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}       => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}      => {predator=TRUE} 0.1683168

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## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catSize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catSize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE} => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE} => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE} => {predator=TRUE} 0.3861386
## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226

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## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}  => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}   => {predator=TRUE} 0.2376238 0.6153846

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## [4] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}      => {predator=TRUE} 0.2277228 0.5897436
## lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
## lhs rhs support confidence
## [1] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}      => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
## lhs rhs support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}   => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE}  => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}       => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381

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##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}        => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}        => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}        => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}        => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}           => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                        => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                     => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}           => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}          => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}                => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}            => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}           => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}          => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}          => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}              => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}          => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}             => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}          => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}          => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}          => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}         => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}              => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}          => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}          => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}             => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}         => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}         => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}          => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}         => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE}         => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}              => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}            => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}          => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}            => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}            => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE}         => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}              => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}          => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE}        => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE}         => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}            => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}            => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}            => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}          => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}                 => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}             => {eggs=FALSE} 0.3663366 0.5781250

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## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}          => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}      => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                 => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380

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## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}     => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}          => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}      => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}        => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}          => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}          => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}           => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}       => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}       => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.2772277 0.7567568

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## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal} => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE} => {catsize=TRUE} 0.3168317
## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE} => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE} => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE} => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE} => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE} => {catsize=TRUE} 0.3168317

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## [40] {breathes=TRUE,tail=TRUE}      => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}       => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}  => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}      => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}          => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}  => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                 => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                  => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                    => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                    => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296

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## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}      => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}       => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}      => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}       => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}    => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}       => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}    => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}    => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}     => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926

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## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE} => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE} => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
## lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
## lhs rhs support confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000

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## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catsize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000

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## [48] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}     => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}    => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}          => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}      => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE}=> {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}    => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}     => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}         => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}     => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE}=> {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}     => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}              => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}    => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}               => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}     => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}              => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734

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## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}    => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}   => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}  => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE} => {hair=FALSE} 0.4356436 0.7719298 1.3442226

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## [8] {airborne=TRUE} => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE} => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE} => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE} => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000

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## [3] {eggs=FALSE,legs=TRUE}      => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}    => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}     => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE}   => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE}   => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}    => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}     => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}    => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}        => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}    => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE}   => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs                                rhs          support  confidence
## [1] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal}     => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE}    => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE}     => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE}   => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE}   => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE}    => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}        => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}        => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE}   => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs          support  confidence
## [1] {hair=TRUE,eggs=FALSE}          => {milk=TRUE} 0.3762376 1.0000000

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## [2] {eggs=FALSE,catsize=TRUE}      => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}    => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}    => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}       => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}        => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}      => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}       => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}         => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}      => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}      => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}   => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}      => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                  => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}  => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}   => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}     => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}   => {milk=TRUE} 0.2178218 0.5641026

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## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}   => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}          => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE}  => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}               => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333

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## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}           => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}         => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}      => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}          => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}       => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}         => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}          => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}      => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}         => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}          => {milk=FALSE} 0.3960396 0.5333333 0.8977778

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## [16] {backbone=TRUE}  => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}   => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}    => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}            => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE}        => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE}        => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}           => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}            => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE}          => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE}          => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}            => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}                => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}          => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}                => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}            => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}            => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}            => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}                  => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}              => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}                => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}            => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}            => {milk=TRUE} 0.3465347 0.4929577
##      lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,backbone=TRUE}            => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}             => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE}           => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE}         => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE}         => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE}         => {milk=TRUE} 0.3861386 0.6000000

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## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catSize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}  => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catSize=TRUE}   => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}  => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}     => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523

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## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE}                      => {fins=FALSE} 0.1782178 1.0000000
## [2] {type=bird}                          => {fins=FALSE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                       => {fins=FALSE} 0.1980198 1.0000000
## [4] {airborne=TRUE}                      => {fins=FALSE} 0.2376238 1.0000000
## [5] {toothed=FALSE}                       => {fins=FALSE} 0.3960396 1.0000000
## [6] {predator=FALSE,tail=FALSE}            => {fins=FALSE} 0.1188119 1.0000000
## [7] {legs=TRUE,tail=FALSE}                 => {fins=FALSE} 0.2079208 1.0000000
## [8] {milk=TRUE,predator=FALSE}              => {fins=FALSE} 0.1881188 1.0000000
## [9] {predator=FALSE,type=mammal}            => {fins=FALSE} 0.1881188 1.0000000
## [10] {eggs=FALSE,predator=FALSE}              => {fins=FALSE} 0.1881188 1.0000000
## [11] {eggs=FALSE,catsize=FALSE}              => {fins=FALSE} 0.1089109 1.0000000
## [12] {hair=TRUE,catsize=FALSE}               => {fins=FALSE} 0.1287129 1.0000000
## [13] {predator=FALSE,catsize=TRUE}            => {fins=FALSE} 0.1584158 1.0000000
## [14] {legs=TRUE,catsize=FALSE}               => {fins=FALSE} 0.4059406 1.0000000
## [15] {breathes=TRUE,catsize=FALSE}            => {fins=FALSE} 0.4059406 1.0000000
## [16] {hair=FALSE,legs=TRUE}                  => {fins=FALSE} 0.3564356 1.0000000
## [17] {eggs=TRUE,legs=TRUE}                   => {fins=FALSE} 0.3960396 1.0000000
## [18] {eggs=TRUE,breathes=TRUE}                => {fins=FALSE} 0.3861386 1.0000000
## [19] {milk=FALSE,legs=TRUE}                   => {fins=FALSE} 0.3960396 1.0000000
## [20] {milk=FALSE,breathes=TRUE}               => {fins=FALSE} 0.3861386 1.0000000
## [21] {legs=TRUE}                             => {fins=FALSE} 0.7623762 0.9871795
## [22] {hair=TRUE}                             => {fins=FALSE} 0.4059406 0.9534884
## [23] {breathes=TRUE}                         => {fins=FALSE} 0.7524752 0.9500000
## [24] {domestic=TRUE}                         => {fins=FALSE} 0.1188119 0.9230769
## [25] {predator=FALSE,domestic=FALSE}          => {fins=FALSE} 0.3069307 0.9117647
## [26] {predator=FALSE}                       => {fins=FALSE} 0.4059406 0.9111111
## [27] {eggs=FALSE}                           => {fins=FALSE} 0.3762376 0.9047619
## [28] {milk=TRUE}                             => {fins=FALSE} 0.3663366 0.9024390
## [29] {type=mammal}                           => {fins=FALSE} 0.3663366 0.9024390
## [30] {catsize=FALSE}                         => {fins=FALSE} 0.4752475 0.8421053
## [31] {venomous=FALSE}                       => {fins=FALSE} 0.7623762 0.8279570
## [32] {catsize=TRUE}                         => {fins=FALSE} 0.3564356 0.8181818
## [33] {domestic=FALSE}                       => {fins=FALSE} 0.7128713 0.8181818
## [34] {backbone=TRUE}                        => {fins=FALSE} 0.6534653 0.7951807
## [35] {feathers=FALSE}                       => {fins=FALSE} 0.6336634 0.7901235
## [36] {tail=TRUE}                            => {fins=FALSE} 0.5841584 0.7866667
## [37] {eggs=TRUE}                            => {fins=FALSE} 0.4554455 0.7796610
## [38] {airborne=FALSE}                       => {fins=FALSE} 0.5940594 0.7792208
## [39] {predator=TRUE}                        => {fins=FALSE} 0.4257426 0.7678571
## [40] {hair=FALSE}                           => {fins=FALSE} 0.4257426 0.7413793
## [41] {toothed=TRUE}                         => {fins=FALSE} 0.4356436 0.7213115
## [42] {aquatic=TRUE}                         => {fins=FALSE} 0.1881188 0.5277778
##      lift
## [1] 1.2023810
## [2] 1.2023810
## [3] 1.2023810
## [4] 1.2023810
## [5] 1.2023810
## [6] 1.2023810

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## [7] 1.2023810
## [8] 1.2023810
## [9] 1.2023810
## [10] 1.2023810
## [11] 1.2023810
## [12] 1.2023810
## [13] 1.2023810
## [14] 1.2023810
## [15] 1.2023810
## [16] 1.2023810
## [17] 1.2023810
## [18] 1.2023810
## [19] 1.2023810
## [20] 1.2023810
## [21] 1.1869658
## [22] 1.1464563
## [23] 1.1422619
## [24] 1.1098901
## [25] 1.0962885
## [26] 1.0955026
## [27] 1.0878685
## [28] 1.0850755
## [29] 1.0850755
## [30] 1.0125313
## [31] 0.9955197
## [32] 0.9837662
## [33] 0.9837662
## [34] 0.9561102
## [35] 0.9500294
## [36] 0.9458730
## [37] 0.9374496
## [38] 0.9369202
## [39] 0.9232568
## [40] 0.8914204
## [41] 0.8672912
## [42] 0.6345899

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {fins=TRUE} 0.1287129 1.0000000 5.941176
## [2] {breathes=FALSE} => {fins=TRUE} 0.1287129 0.6190476 3.677871
## [3] {hair=FALSE}   => {fins=TRUE} 0.1485149 0.2586207 1.536511
##      lhs      rhs      support  confidence lift
## [1] {hair=FALSE,legs=TRUE} => {fins=FALSE} 0.3564356 1 1.202381
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}   => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE}       => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal}   => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal}       => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal}       => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE}   => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE}        => {hair=TRUE} 0.3663366 0.9736842

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## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737

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## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}      => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}                 => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}      => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}   => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                  => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}       => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}                 => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227

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## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}       => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}      => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}     => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}      => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}      => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}      => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}     => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}     => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}          => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}     => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}       => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift

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## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}   => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}      => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}     => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}    => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}           => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}            => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}          => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}           => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE}         => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}          => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}         => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}             => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE}        => {hair=TRUE} 0.3960396 0.5405405
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981

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## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal}    => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE}    => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE}     => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE}     => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}         => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}         => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}          => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}         => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}        => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}        => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}           => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}           => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}           => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}              => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}          => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}           => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}             => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}          => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}        => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}          => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}         => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}            => {milk=TRUE} 0.3663366 0.8809524

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## [19] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE} => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE} => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE} => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE} => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605

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## [73] {predator=TRUE}          => {milk=TRUE} 0.2178218 0.3928571
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162

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## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}        => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}         => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}      => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061

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## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}  => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}  => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}     => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE}   => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}    => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481

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##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}        => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}      => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}         => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}        => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}    => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE}                   => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE}               => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE}    => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE}         => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}             => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE}            => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE}       => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE}          => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE}         => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE}        => {hair=FALSE} 0.3366337 1.0000000

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## [13] {eggs=TRUE,toothed=TRUE}      => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE}     => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}        => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE}   => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE}    => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE}     => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE}         => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE}    => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE}     => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE}      => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE}   => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE}                  => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE}     => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE} => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE}   => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE} => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE}    => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE}  => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE}      => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE}     => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE}                => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE}               => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE} => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE}     => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catsize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE}              => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE}               => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE}               => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE}   => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE}               => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE}   => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE}                  => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE}               => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE}               => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE}                   => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE}               => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793
## [10] 1.7413793

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## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}      => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}    => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}     => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}   => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}  => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                rhs      support  confidence

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## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
## lift
## [1] 1.741379
## [2] 1.741379
## lhs rhs support confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE} => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
## lhs rhs support confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE} => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE} => {hair=FALSE} 0.1584158 0.6956522
## lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE} => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE} => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE} => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE} => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [17] {type=bird} => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE} => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE} => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE} => {predator=FALSE} 0.2475248

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## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE} => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE} => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE} => {predator=FALSE} 0.2871287
## [29] {milk=TRUE} => {predator=FALSE} 0.1881188
## [30] {type=mammal} => {predator=FALSE} 0.1881188
## [31] {tail=FALSE} => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE} => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE} => {predator=FALSE} 0.2574257
## [34] {milk=FALSE} => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE} => {predator=FALSE} 0.3366337
## [36] {hair=FALSE} => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE} => {predator=FALSE} 0.1584158
##      confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340

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## [2] {aquatic=TRUE}    => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}        => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}    => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}    => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}       => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}        => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}         => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}    => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                                rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                                rhs          support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                                rhs          support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                                rhs          support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}     => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}  => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}       => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {domestic=TRUE}                => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE}       => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE}   => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE}                 => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE}    => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE}      => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE}    => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE}        => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE}    => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE}       => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE}    => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE}   => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE}       => {predator=FALSE} 0.2178218

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## [15] {milk=FALSE,breathes=TRUE}    => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE}      => {predator=FALSE} 0.2277228
## [17] {type=bird}                    => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE}                => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE}  => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE}                => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE}     => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE}                => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE}          => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE}    => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE}         => {predator=FALSE} 0.2871287
## [29] {milk=TRUE}                    => {predator=FALSE} 0.1881188
## [30] {type=mammal}                  => {predator=FALSE} 0.1881188
## [31] {tail=FALSE}                   => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE}                   => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE}                    => {predator=FALSE} 0.2574257
## [34] {milk=FALSE}                   => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE}               => {predator=FALSE} 0.3366337
## [36] {hair=FALSE}                   => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE}                 => {predator=FALSE} 0.1584158
##      confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084

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## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}       => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}    => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}   => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}      => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}       => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}        => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}   => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs      support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                      rhs      support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}     => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support
## [1] {type=fish}                => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                  => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}   => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}             => {aquatic=TRUE} 0.1980198

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## [6] {backbone=TRUE,legs=FALSE}      => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}        => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}      => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}    => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                   => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}       => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}      => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}     => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}      => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}      => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}     => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}      => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catSize=FALSE}   => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}     => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}      => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}   => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}      => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catSize=FALSE}    => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catSize=FALSE}  => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}          => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catSize=FALSE}   => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catSize=FALSE}  => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catSize=FALSE}  => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catSize=FALSE}       => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE}  => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                 => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                     => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}                => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                 => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                 => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575

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## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE}  => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}       => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474

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## lift
## [1] 1.624269
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE} => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
## lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
## lhs rhs support confidence
## [1] {hair=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
## lhs rhs support confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1485149 0.4054054
## lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248 0.6756757

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## [4] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}  => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}      => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}=> {aquatic=TRUE} 0.2871287 0.5370370
## lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,toothed=TRUE} => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal} => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal} => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE} => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE} => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal} => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE} => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE} => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE} => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE} => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE} => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE} => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE} => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE} => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE} => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE} => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE} => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE} => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000

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## [41] {airborne=FALSE,fins=FALSE}      => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}      => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE}   => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}        => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}           => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE}  => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE}  => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE}  => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}       => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}       => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                 => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590

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## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}      => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}   => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}  => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE} => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}      => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}  => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}    => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}      => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}     => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}       => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}  => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}   => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence

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## [1] {hair=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal} => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE} => {catsize=TRUE} 0.3168317
## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE} => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE} => {catsize=TRUE} 0.3168317

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## [34] {toothed=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}  => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}      => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}          => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}      => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}      => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}     => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}         => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                 => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                   => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                   => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042

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## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}   => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}      => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}        => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}       => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE}   => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}        => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}     => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}        => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}     => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}    => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE}  => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}        => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}      => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##      lhs                                rhs      support  confidence

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## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal}     => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE}    => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
## lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
## lhs      rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734

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## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}     => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}    => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}   => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}       => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                    => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                  => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}      => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}     => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}          => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}      => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}     => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}   => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}       => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}   => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}   => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}   => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE}   => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}        => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}       => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}    => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}       => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}        => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}    => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE}   => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}      => {eggs=FALSE} 0.3564356 0.6000000

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## [42] {airborne=FALSE,tail=TRUE}      => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE}  => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}       => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}          => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}      => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                 => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175

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## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}     => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}          => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}      => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}        => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}          => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}         => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}          => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}      => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}       => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667

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## [2] {toothed=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}       => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                          => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                           => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}             => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}         => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                       => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}              => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}                => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}                => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}                 => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}               => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}              => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                           => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}                => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}               => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}              => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}               => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}               => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}              => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}              => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}               => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}             => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}               => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}                => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}             => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}               => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}                => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}                => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}              => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}                    => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}            => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}                => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE}            => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}               => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}                   => {aquatic=TRUE} 0.2079208

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## [35] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE} => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE} => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE} => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE} => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE} => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658

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## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}     => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}     => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293

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## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}          => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}         => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}       => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}       => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}           => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}          => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}           => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}              => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}         => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}          => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}             => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}         => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}       => {milk=TRUE} 0.3465347 0.9210526

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## [16] {hair=TRUE,domestic=FALSE}      => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}      => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}         => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}     => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}        => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}    => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}         => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}        => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}    => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE}   => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE}   => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE}   => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE}   => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}       => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}    => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                  => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}   => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}        => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE}  => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}    => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}        => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}    => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}        => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}      => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}       => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}            => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE}   => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}        => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}    => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE}  => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}       => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE}  => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}    => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE}   => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}           => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE}  => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE}   => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}        => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE}   => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}       => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}                 => {milk=TRUE} 0.4059406 0.5061728

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## [70] {venomous=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                  => {milk=TRUE} 0.2178218 0.3928571
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992

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## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}                => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}            => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}                 => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}              => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}             => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}                  => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}                => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}              => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}                 => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}               => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}                 => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}                  => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}              => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}                 => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}                  => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}              => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}              => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}               => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778

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## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652

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## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}        => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}       => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}         => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}        => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}        => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}        => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}      => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                      => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                    => {catsize=TRUE} 0.3168317

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## [10] {eggs=FALSE,venomous=FALSE}    => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}       => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}          => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                   => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}     => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                    => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}    => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}    => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}       => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}   => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}   => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}       => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}           => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}       => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}       => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}  => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}      => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}          => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}  => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                 => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                  => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                    => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                    => {catsize=TRUE} 0.1188119
## confidence lift

```

```
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
```

```

## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}    => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}     => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}    => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149

##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986

##      lhs      rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}    => {catsize=TRUE} 0.3366337 0.6296296

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## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}    => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE} => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE} => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE} => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE} => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [17] {type=bird} => {predator=FALSE} 0.1089109

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## [18] {feathers=TRUE} => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE} => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE} => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE} => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE} => {predator=FALSE} 0.2871287
## [29] {milk=TRUE} => {predator=FALSE} 0.1881188
## [30] {type=mammal} => {predator=FALSE} 0.1881188
## [31] {tail=FALSE} => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE} => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE} => {predator=FALSE} 0.2574257
## [34] {milk=FALSE} => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE} => {predator=FALSE} 0.3366337
## [36] {hair=FALSE} => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE} => {predator=FALSE} 0.1584158
## confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772

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## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs          support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}      => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}   => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}  => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}     => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}      => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}       => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}  => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs          support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}    => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs          support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                      rhs          support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}     => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=fish}                => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE}                  => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}   => {toothed=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE}       => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE}   => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE}   => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE}                 => {toothed=TRUE} 0.4059406

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## [9] {hair=TRUE,backbone=TRUE}      => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE}     => {toothed=TRUE} 0.3564356
## [11] {hair=TRUE,tail=TRUE}          => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE} => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE}      => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE}     => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE}  => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE} => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE}     => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE}  => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE}   => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE}                  => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE}   => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE}=> {toothed=TRUE} 0.5841584
## [23] {airborne=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE}                => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE}=> {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE} => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE} => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE}=> {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE}=> {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE}  => {toothed=TRUE} 0.2277228
## [33] {aquatic=TRUE,backbone=TRUE}   => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE}              => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE}      => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE}       => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE}  => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE}                   => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE}  => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE}              => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE}                => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE}                 => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE}              => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE}                => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE}              => {toothed=TRUE} 0.2376238
## [46] {catsize=FALSE}                => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE}                  => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE}                   => {toothed=TRUE} 0.1980198
## confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154
## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508

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## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216
## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368
## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488
## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}    => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}     => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE}  => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}    => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267 0.6923077
##      lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092

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## [5] 1.165149
## [6] 1.146280
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                            => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                        => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}            => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}              => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}              => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}               => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}                   => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}                   => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}                => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}                => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}                => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}                => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}                => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}                => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}                => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}                => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}                => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}                 => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}                   => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}                 => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}                 => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}                   => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}                  => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                              => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                              => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}                => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}                  => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}                  => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}                  => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}                => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}                => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                              => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}                => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}                  => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}                    => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}                    => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}                => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}                => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                              => {toothed=FALSE} 0.1881188
##      confidence lift

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## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}  => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE} => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE} => {toothed=TRUE} 0.1881188 0.8260870 1.3677833

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## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}     => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE} => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}   => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}    => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                                rhs      support
## [1] {tail=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}     => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}       => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                                rhs      support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}      => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}       => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423

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## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                rhs      support  confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}   => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}       => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}   => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}  => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}  => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793

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## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}    => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}    => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                    => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                  => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}       => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}           => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                   => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                    => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}    => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}    => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}       => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}   => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}   => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}       => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}           => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}       => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}       => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208

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## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}   => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}       => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}           => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}   => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}   => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                  => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                   => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                     => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                     => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138

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## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}  => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}     => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}     => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}   => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}    => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##      lift

```



```

## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986

##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327 0.5500000

##      lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500

##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}      => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}           => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238 0.7058824

##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321

##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307 0.7560976

##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"

##      lhs                                rhs      support  confidence

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```

## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174

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## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE} => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE} => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE} => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193

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## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}     => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}    => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}    => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}   => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}    => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}    => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}     => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}       => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}    => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}    => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}        => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}   => {hair=FALSE} 0.2574257 0.4000000 0.6965517

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	lhs	rhs	support	confidence
## [1]	{aquatic=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3465347	0.6603774
## [2]	{feathers=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3861386	0.6190476
## [3]	{backbone=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3762376	0.5937500
## [4]	{airborne=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3663366	0.5692308
## [5]	{backbone=TRUE,breathes=TRUE}	=> {hair=TRUE}	0.3861386	0.5652174
## [6]	{backbone=TRUE,fins=FALSE}	=> {hair=TRUE}	0.3663366	0.5606061
## [7]	{predator=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.1881188	0.5277778
## [8]	{backbone=TRUE,venomous=FALSE}	=> {hair=TRUE}	0.3861386	0.4936709
##	lift			
## [1]	1.551119			
## [2]	1.454042			
## [3]	1.394622			
## [4]	1.337030			
## [5]	1.327604			
## [6]	1.316772			
## [7]	1.239664			
## [8]	1.159553			
	lhs	rhs	support	confidence
## [1]	{eggs=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3762376	0.9268293
## [2]	{toothed=TRUE,breathes=TRUE}	=> {hair=TRUE}	0.3762376	0.8085106
## [3]	{breathes=TRUE,catsize=TRUE}	=> {hair=TRUE}	0.2970297	0.7692308
## [4]	{feathers=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.4257426	0.7166667
## [5]	{airborne=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3663366	0.6607143
## [6]	{aquatic=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3861386	0.6093750
## [7]	{breathes=TRUE,legs=TRUE}	=> {hair=TRUE}	0.4158416	0.5753425
## [8]	{backbone=TRUE,breathes=TRUE}	=> {hair=TRUE}	0.3861386	0.5652174
## [9]	{predator=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.2277228	0.5609756
## [10]	{breathes=TRUE,venomous=FALSE}	=> {hair=TRUE}	0.4059406	0.5466667
## [11]	{breathes=TRUE,tail=TRUE}	=> {hair=TRUE}	0.3267327	0.5409836
## [12]	{breathes=TRUE,fins=FALSE}	=> {hair=TRUE}	0.4059406	0.5394737
##	lift			
## [1]	2.176971			
## [2]	1.899060			
## [3]	1.806798			
## [4]	1.683333			
## [5]	1.551910			
## [6]	1.431323			
## [7]	1.351386			
## [8]	1.327604			
## [9]	1.317640			
## [10]	1.284031			
## [11]	1.270682			
## [12]	1.267136			
	lhs	rhs	support	confidence
## [1]	{milk=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3762376	1.0000000
## [2]	{legs=TRUE,type=mammal}	=> {hair=TRUE}	0.3762376	1.0000000
## [3]	{eggs=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3663366	0.9736842
## [4]	{toothed=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3663366	0.8809524
## [5]	{legs=TRUE,catsize=TRUE}	=> {hair=TRUE}	0.2871287	0.7837838
## [6]	{feathers=FALSE,legs=TRUE}	=> {hair=TRUE}	0.4158416	0.7241379
## [7]	{airborne=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3564356	0.6666667
## [8]	{aquatic=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3861386	0.6500000
## [9]	{backbone=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3762376	0.5937500

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## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs          rhs          support  confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}    => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}   => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs          rhs          support
## [1] {milk=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}  => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}   => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}   => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}   => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal} => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                  => {catsize=TRUE} 0.3168317

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## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE} => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE} => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE} => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE} => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE} => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE} => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE} => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE} => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE} => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE} => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE} => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE} => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE} => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE} => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE} => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE} => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE} => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE} => {catsize=TRUE} 0.1188119

```

##		confidence	lift
##	[1]	0.9090909	2.0867769
##	[2]	0.9090909	2.0867769
##	[3]	0.9000000	2.0659091
##	[4]	0.8260870	1.8962451
##	[5]	0.8108108	1.8611794
##	[6]	0.7878788	1.8085399
##	[7]	0.7878788	1.8085399
##	[8]	0.7804878	1.7915743
##	[9]	0.7804878	1.7915743
##	[10]	0.7750000	1.7789773
##	[11]	0.7692308	1.7657343
##	[12]	0.7575758	1.7389807
##	[13]	0.7560976	1.7355876
##	[14]	0.7380952	1.6942641
##	[15]	0.7317073	1.6796009
##	[16]	0.7058824	1.6203209
##	[17]	0.6976744	1.6014799
##	[18]	0.6842105	1.5705742
##	[19]	0.6666667	1.5303030
##	[20]	0.6595745	1.5140232
##	[21]	0.6428571	1.4756494
##	[22]	0.6304348	1.4471344
##	[23]	0.6296296	1.4452862
##	[24]	0.6216216	1.4269042
##	[25]	0.6153846	1.4125874
##	[26]	0.6140351	1.4094896
##	[27]	0.6136364	1.4085744
##	[28]	0.5964912	1.3692185
##	[29]	0.5925926	1.3602694
##	[30]	0.5897436	1.3537296
##	[31]	0.5873016	1.3481241
##	[32]	0.5849057	1.3426244
##	[33]	0.5818182	1.3355372
##	[34]	0.5769231	1.3243007
##	[35]	0.5744681	1.3186654
##	[36]	0.5652174	1.2974308
##	[37]	0.5633803	1.2932138
##	[38]	0.5625000	1.2911932
##	[39]	0.5614035	1.2886762
##	[40]	0.5573770	1.2794337
##	[41]	0.5510204	1.2648423
##	[42]	0.5500000	1.2625000
##	[43]	0.5500000	1.2625000
##	[44]	0.5476190	1.2570346
##	[45]	0.5400000	1.2395455
##	[46]	0.5384615	1.2360140
##	[47]	0.5344828	1.2268809
##	[48]	0.5319149	1.2209865
##	[49]	0.5316456	1.2203682
##	[50]	0.5303030	1.2172865
##	[51]	0.5294118	1.2152406
##	[52]	0.5254237	1.2060863
##	[53]	0.5211268	1.1962228


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## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}    => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}    => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##      lhs                      rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal}   => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}     => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE}   => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}     => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348

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## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}              => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}          => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1386139 0.3888889

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## [17] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}     => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}        => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}    => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}     => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                  => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}      => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}              => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}               => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}              => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186

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## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs          support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}           => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}       => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}            => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}        => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}           => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}           => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}          => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}           => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}            => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}        => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}        => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}         => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}        => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}        => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}           => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}        => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}             => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}         => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}         => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs          support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs          support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}   => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                rhs          support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}       => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                rhs          support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412

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## lift
## [1] 1.371041
## lhs rhs support confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590

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## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}          => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}            => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}         => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}         => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}            => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}        => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}        => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}         => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                     => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}         => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}        => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}        => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                 => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                 => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                 => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231

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## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}  => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}       => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}    => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}      => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}       => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}     => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}      => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}       => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}   => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}   => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}    => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}  => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}  => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}      => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}  => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}       => {tail=TRUE} 0.3861386 0.6610169 0.8901695

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## [19] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}      => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}       => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308

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## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}    => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}     => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}        => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}       => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}           => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}      => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}        => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250

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## [15] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}     => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}    => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}     => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                  => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}      => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}              => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}               => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}              => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282

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## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}          => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}           => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}       => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}          => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}           => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}         => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}          => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}           => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}      => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}      => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}       => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}     => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}     => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}          => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}     => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}           => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}      => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}     => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441

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##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}     => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}    => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}    => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}        => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}       => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1188119 0.3529412
##      lift

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## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=FALSE}      => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE}          => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal}     => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal}     => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal}          => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal}          => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE}      => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE}            => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE}       => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE}                      => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal}                     => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE}       => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE}            => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE}        => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE}      => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE}                      => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE}           => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE}       => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE}        => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE}          => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE}       => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE}      => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catsize=TRUE}      => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE}           => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE}          => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catsize=TRUE}       => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE}     => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catsize=TRUE}      => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE}     => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE}     => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE}    => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE}      => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE}         => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE}     => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE}      => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE}          => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE}        => {hair=TRUE} 0.4059406 0.6406250

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## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE} => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE} => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE} => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925

```

##	[21]	1.9461794		
##	[22]	1.9217759		
##	[23]	1.8990599		
##	[24]	1.8594961		
##	[25]	1.8543452		
##	[26]	1.8409805		
##	[27]	1.8268734		
##	[28]	1.8067979		
##	[29]	1.7961696		
##	[30]	1.7616279		
##	[31]	1.7008821		
##	[32]	1.6850354		
##	[33]	1.6833333		
##	[34]	1.5889193		
##	[35]	1.5658915		
##	[36]	1.5658915		
##	[37]	1.5519103		
##	[38]	1.5511189		
##	[39]	1.5267442		
##	[40]	1.5047238		
##	[41]	1.4632101		
##	[42]	1.4540421		
##	[43]	1.4380636		
##	[44]	1.4313227		
##	[45]	1.4260797		
##	[46]	1.4247045		
##	[47]	1.4093023		
##	[48]	1.3946221		
##	[49]	1.3852117		
##	[50]	1.3701550		
##	[51]	1.3598531		
##	[52]	1.3513858		
##	[53]	1.3370304		
##	[54]	1.3276036		
##	[55]	1.3192099		
##	[56]	1.3176404		
##	[57]	1.3176404		
##	[58]	1.3167724		
##	[59]	1.2840310		
##	[60]	1.2774378		
##	[61]	1.2739456		
##	[62]	1.2706824		
##	[63]	1.2696417		
##	[64]	1.2671359		
##	[65]	1.2396641		
##	[66]	1.2240419		
##	[67]	1.2100070		
##	[68]	1.2005168		
##	[69]	1.1896708		
##	[70]	1.1595525		
##	[71]	1.1036705		
##	[72]	1.0917131		
##	[73]	0.9075053		
##	lhs	rhs	support	confidence lift

```

## [1] {type=fish}      => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}     => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}  => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}  => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}  => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}  => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}  => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}     => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}  => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}     => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                                     rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                     rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE}  => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604

```



```

## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
##      lhs      rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs      rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119

```

```

## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=bird}                        => {legs=TRUE} 0.1980198 1.0000000
## [2] {feathers=TRUE}                    => {legs=TRUE} 0.1980198 1.0000000
## [3] {airborne=TRUE}                    => {legs=TRUE} 0.2376238 1.0000000
## [4] {breathes=TRUE,domestic=TRUE}      => {legs=TRUE} 0.1188119 1.0000000
## [5] {fins=FALSE,domestic=TRUE}          => {legs=TRUE} 0.1188119 1.0000000
## [6] {toothed=FALSE,tail=TRUE}           => {legs=TRUE} 0.2277228 1.0000000
## [7] {toothed=FALSE,backbone=TRUE}       => {legs=TRUE} 0.2178218 1.0000000
## [8] {milk=TRUE,predator=FALSE}          => {legs=TRUE} 0.1881188 1.0000000
## [9] {milk=TRUE,fins=FALSE}              => {legs=TRUE} 0.3663366 1.0000000
## [10] {predator=FALSE,type=mammal}        => {legs=TRUE} 0.1881188 1.0000000
## [11] {fins=FALSE,type=mammal}           => {legs=TRUE} 0.3663366 1.0000000
## [12] {eggs=FALSE,predator=FALSE}         => {legs=TRUE} 0.1881188 1.0000000
## [13] {hair=TRUE,catsize=FALSE}           => {legs=TRUE} 0.1287129 1.0000000
## [14] {hair=TRUE,fins=FALSE}              => {legs=TRUE} 0.4059406 1.0000000
## [15] {predator=FALSE,catsize=TRUE}       => {legs=TRUE} 0.1584158 1.0000000
## [16] {fins=FALSE,catsize=TRUE}           => {legs=TRUE} 0.3564356 1.0000000
## [17] {hair=TRUE}                        => {legs=TRUE} 0.4158416 0.9767442
## [18] {eggs=FALSE,fins=FALSE}             => {legs=TRUE} 0.3663366 0.9736842
## [19] {aquatic=FALSE,backbone=TRUE}       => {legs=TRUE} 0.5049505 0.9622642
## [20] {backbone=TRUE,fins=FALSE}          => {legs=TRUE} 0.6237624 0.9545455
## [21] {predator=FALSE,fins=FALSE}         => {legs=TRUE} 0.3861386 0.9512195
## [22] {fins=FALSE,tail=TRUE}              => {legs=TRUE} 0.5544554 0.9491525
## [23] {venomous=FALSE,fins=FALSE}         => {legs=TRUE} 0.7227723 0.9480519
## [24] {breathes=TRUE,fins=FALSE}          => {legs=TRUE} 0.7128713 0.9473684
## [25] {toothed=FALSE,breathes=TRUE}       => {legs=TRUE} 0.3069307 0.9393939
## [26] {aquatic=FALSE,venomous=FALSE}      => {legs=TRUE} 0.5643564 0.9344262
## [27] {toothed=TRUE,fins=FALSE}           => {legs=TRUE} 0.4059406 0.9318182
## [28] {milk=TRUE}                        => {legs=TRUE} 0.3762376 0.9268293
## [29] {type=mammal}                      => {legs=TRUE} 0.3762376 0.9268293
## [30] {domestic=TRUE}                    => {legs=TRUE} 0.1188119 0.9230769
## [31] {aquatic=FALSE}                    => {legs=TRUE} 0.5940594 0.9230769
## [32] {breathes=TRUE,venomous=FALSE}      => {legs=TRUE} 0.6831683 0.9200000
## [33] {toothed=FALSE,venomous=FALSE}      => {legs=TRUE} 0.3267327 0.9166667
## [34] {eggs=FALSE}                      => {legs=TRUE} 0.3762376 0.9047619
## [35] {toothed=FALSE}                    => {legs=TRUE} 0.3564356 0.9000000
## [36] {predator=FALSE,backbone=TRUE}      => {legs=TRUE} 0.3168317 0.8888889
## [37] {predator=FALSE}                   => {legs=TRUE} 0.3861386 0.8666667
## [38] {catsize=TRUE}                     => {legs=TRUE} 0.3663366 0.8409091
## [39] {venomous=FALSE,tail=FALSE}         => {legs=TRUE} 0.1782178 0.8181818
## [40] {tail=FALSE}                       => {legs=TRUE} 0.2079208 0.8076923
## [41] {backbone=FALSE}                   => {legs=TRUE} 0.1386139 0.7777778
## [42] {tail=TRUE}                        => {legs=TRUE} 0.5643564 0.7600000
## [43] {catsize=FALSE}                     => {legs=TRUE} 0.4059406 0.7192982
## [44] {airborne=FALSE}                   => {legs=TRUE} 0.5346535 0.7012987
## [45] {toothed=TRUE}                     => {legs=TRUE} 0.4158416 0.6885246
## [46] {eggs=TRUE}                        => {legs=TRUE} 0.3960396 0.6779661
## [47] {milk=FALSE}                       => {legs=TRUE} 0.3960396 0.6666667
## [48] {aquatic=TRUE}                     => {legs=TRUE} 0.1782178 0.5000000

```

```

##      lift
## [1] 1.2948718
## [2] 1.2948718
## [3] 1.2948718
## [4] 1.2948718
## [5] 1.2948718
## [6] 1.2948718
## [7] 1.2948718
## [8] 1.2948718
## [9] 1.2948718
## [10] 1.2948718
## [11] 1.2948718
## [12] 1.2948718
## [13] 1.2948718
## [14] 1.2948718
## [15] 1.2948718
## [16] 1.2948718
## [17] 1.2647585
## [18] 1.2607962
## [19] 1.2460087
## [20] 1.2360140
## [21] 1.2317073
## [22] 1.2290309
## [23] 1.2276057
## [24] 1.2267206
## [25] 1.2163947
## [26] 1.2099622
## [27] 1.2065851
## [28] 1.2001251
## [29] 1.2001251
## [30] 1.1952663
## [31] 1.1952663
## [32] 1.1912821
## [33] 1.1869658
## [34] 1.1715507
## [35] 1.1653846
## [36] 1.1509972
## [37] 1.1222222
## [38] 1.0888695
## [39] 1.0594406
## [40] 1.0458580
## [41] 1.0071225
## [42] 0.9841026
## [43] 0.9313990
## [44] 0.9080919
## [45] 0.8915511
## [46] 0.8778792
## [47] 0.8632479
## [48] 0.6474359
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {legs=FALSE} 0.1287129 1.0000000 4.391304
## [2] {fins=TRUE}     => {legs=FALSE} 0.1584158 0.9411765 4.132992
## [3] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048 3.345756
## [4] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714 1.333075

```

```

## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                          => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                          => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}           => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}       => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                      => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}            => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}              => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}              => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}               => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}             => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}           => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                          => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}              => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}             => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}            => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}             => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}             => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}            => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}            => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}             => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}          => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}            => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}             => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}          => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}            => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}              => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}             => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}           => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}                  => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}         => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}             => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE}         => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}            => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}                 => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}          => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE}          => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE}        => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE}         => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}          => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE}        => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE}         => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}              => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE}         => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                        => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                            => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}                       => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                        => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                        => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556

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## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462

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## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}    => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}     => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500

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## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}  => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}  => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}      => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}=> {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {type=fish}                      => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                       => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}        => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                  => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}           => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}          => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}        => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                      => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}           => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}         => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}          => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}          => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}        => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}          => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}          => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}        => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}          => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}           => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}           => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}         => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}               => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}       => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}          => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE}       => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}         => {aquatic=TRUE} 0.2871287

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## [34] {milk=FALSE,tail=TRUE}      => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}     => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}              => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                  => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}             => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}              => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}              => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444

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## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE}  => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}       => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}        => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687

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## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs          support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}    => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}      => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {type=fish}                        => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                        => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}         => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                   => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}           => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}       => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                      => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}        => {aquatic=TRUE} 0.2475248

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## [15] {hair=FALSE,feathers=FALSE}    => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}      => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}    => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}    => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}    => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}     => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}  => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}     => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}    => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}         => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}        => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}     => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}               => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                   => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}              => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}               => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}               => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602

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## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}     => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}       => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
##      lift

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## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}    => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,toothed=TRUE}       => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}        => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}      => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}      => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}        => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}            => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496

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## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                          => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                      => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}           => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}             => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}             => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}            => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}             => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}            => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}                 => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}                 => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}                 => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}                 => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}                 => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}              => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}             => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}                 => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}                 => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}             => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}            => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}            => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}             => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}            => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}             => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}              => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}             => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}            => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}               => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}              => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                           => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                           => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}          => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}            => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}          => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                        => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}            => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}        => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}            => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}             => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}             => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}         => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}         => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                        => {toothed=FALSE} 0.1881188

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```

##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}  => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE} => {toothed=TRUE} 0.4059406 0.9761905 1.6163154

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## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}      => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}   => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}     => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}  => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}    => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}     => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs          support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}    => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                      rhs          support
## [1] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}     => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188
##      confidence lift

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## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                rhs      support  confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}   => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}       => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}   => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE}   => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}     => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}         => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}        => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}         => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}     => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}    => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000

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## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}    => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}    => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}   => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}       => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                    => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                  => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}      => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}      => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}       => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}     => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}   => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}       => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE}  => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE}  => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}   => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE}  => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE}  => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}        => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}   => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}      => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}   => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}      => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}           => {eggs=FALSE} 0.3267327 0.5789474

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## [46] {backbone=TRUE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE}  => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}       => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}          => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}      => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                 => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}     => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004

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## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}      => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}          => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}      => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}        => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}          => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}          => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}           => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}       => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}       => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7948718

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## [6] {legs=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE} => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE} => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE} => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE} => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE} => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE} => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE} => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE} => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE} => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE} => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218

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## [39] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                   => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}              => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}               => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}               => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831

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## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs          support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE}  => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}       => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs          support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}        => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931

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## [9] 1.145931
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE}=> {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}=> {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}     => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}    => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}   => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}   => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}     => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}         => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1287129
## [3] {type=bird}                     => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                 => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}        => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}       => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}        => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                  => {airborne=TRUE} 0.2178218

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## [20] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}    => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}  => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}   => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}   => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}  => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}            => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}           => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846

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## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550

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## [10] {predator=TRUE}  => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}  => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}    => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}     => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}       => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence

```

```

## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}       => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175

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```

## [9] 1.588050
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1287129
## [3] {type=bird}                      => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                  => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}    => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}        => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}       => {airborne=TRUE} 0.1485149

```

```

## [14] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}         => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}               => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556

```

```

## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883

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## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}    => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}    => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}     => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}     => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE} => {airborne=FALSE} 0.1782178 0.4500000 0.5902597

##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.3750000

##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125

##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178 0.3050847

##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898

##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667

##      lift
## [1] 2.649691

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## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885

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## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}       => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}       => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {catsize=FALSE,type=bird}        => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1287129
## [3] {type=bird}                        => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                    => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}    => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158

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## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE} => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE} => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE} => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE} => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE} => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE} => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE} => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381

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##	[3]	0.8000000	3.3666667
##	[4]	0.8000000	3.3666667
##	[5]	0.7272727	3.0606061
##	[6]	0.7142857	3.0059524
##	[7]	0.6956522	2.9275362
##	[8]	0.6666667	2.8055556
##	[9]	0.6296296	2.6496914
##	[10]	0.6129032	2.5793011
##	[11]	0.6111111	2.5717593
##	[12]	0.5862069	2.4669540
##	[13]	0.5769231	2.4278846
##	[14]	0.5769231	2.4278846
##	[15]	0.5666667	2.3847222
##	[16]	0.5641026	2.3739316
##	[17]	0.5641026	2.3739316
##	[18]	0.5555556	2.3379630
##	[19]	0.5500000	2.3145833
##	[20]	0.5500000	2.3145833
##	[21]	0.5500000	2.3145833
##	[22]	0.5172414	2.1767241
##	[23]	0.5121951	2.1554878
##	[24]	0.5121951	2.1554878
##	[25]	0.5000000	2.1041667
##	[26]	0.5000000	2.1041667
##	[27]	0.5000000	2.1041667
##	[28]	0.5000000	2.1041667
##	[29]	0.4864865	2.0472973
##	[30]	0.4782609	2.0126812
##	[31]	0.4680851	1.9698582
##	[32]	0.4375000	1.8411458
##	[33]	0.4358974	1.8344017
##	[34]	0.4186047	1.7616279
##	[35]	0.4146341	1.7449187
##	[36]	0.4146341	1.7449187
##	[37]	0.4130435	1.7382246
##	[38]	0.4102564	1.7264957
##	[39]	0.4054054	1.7060811
##	[40]	0.4000000	1.6833333
##	[41]	0.3958333	1.6657986
##	[42]	0.3846154	1.6185897
##	[43]	0.3823529	1.6090686
##	[44]	0.3809524	1.6031746
##	[45]	0.3809524	1.6031746
##	[46]	0.3809524	1.6031746
##	[47]	0.3800000	1.5991667
##	[48]	0.3773585	1.5880503
##	[49]	0.3750000	1.5781250
##	[50]	0.3461538	1.4567308
##	[51]	0.3287671	1.3835616
##	[52]	0.3166667	1.3326389
##	[53]	0.3157895	1.3289474
##	[54]	0.3157895	1.3289474
##	[55]	0.3116883	1.3116883
##	[56]	0.3050847	1.2838983

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## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}                 => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE}           => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}               => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}              => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}                => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}                => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}               => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}              => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}             => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}              => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}                => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}             => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}               => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}                => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}             => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}               => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}            => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}                => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}                => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}           => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}            => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069

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## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs                                rhs                                support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs                                rhs                                support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}   => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}        => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435

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## [7] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129

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## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE} => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE} => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE} => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE} => {airborne=TRUE} 0.2376238

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## [56] {fins=FALSE,tail=TRUE}	=> {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}	=> {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}	=> {airborne=TRUE} 0.2178218
## confidence lift	
## [1] 0.9285714 3.9077381	
## [2] 0.9285714 3.9077381	
## [3] 0.8000000 3.3666667	
## [4] 0.8000000 3.3666667	
## [5] 0.7272727 3.0606061	
## [6] 0.7142857 3.0059524	
## [7] 0.6956522 2.9275362	
## [8] 0.6666667 2.8055556	
## [9] 0.6296296 2.6496914	
## [10] 0.6129032 2.5793011	
## [11] 0.6111111 2.5717593	
## [12] 0.5862069 2.4669540	
## [13] 0.5769231 2.4278846	
## [14] 0.5769231 2.4278846	
## [15] 0.5666667 2.3847222	
## [16] 0.5641026 2.3739316	
## [17] 0.5641026 2.3739316	
## [18] 0.5555556 2.3379630	
## [19] 0.5500000 2.3145833	
## [20] 0.5500000 2.3145833	
## [21] 0.5500000 2.3145833	
## [22] 0.5172414 2.1767241	
## [23] 0.5121951 2.1554878	
## [24] 0.5121951 2.1554878	
## [25] 0.5000000 2.1041667	
## [26] 0.5000000 2.1041667	
## [27] 0.5000000 2.1041667	
## [28] 0.5000000 2.1041667	
## [29] 0.4864865 2.0472973	
## [30] 0.4782609 2.0126812	
## [31] 0.4680851 1.9698582	
## [32] 0.4375000 1.8411458	
## [33] 0.4358974 1.8344017	
## [34] 0.4186047 1.7616279	
## [35] 0.4146341 1.7449187	
## [36] 0.4146341 1.7449187	
## [37] 0.4130435 1.7382246	
## [38] 0.4102564 1.7264957	
## [39] 0.4054054 1.7060811	
## [40] 0.4000000 1.6833333	
## [41] 0.3958333 1.6657986	
## [42] 0.3846154 1.6185897	
## [43] 0.3823529 1.6090686	
## [44] 0.3809524 1.6031746	
## [45] 0.3809524 1.6031746	
## [46] 0.3809524 1.6031746	
## [47] 0.3800000 1.5991667	
## [48] 0.3773585 1.5880503	
## [49] 0.3750000 1.5781250	
## [50] 0.3461538 1.4567308	

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## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}                => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}                 => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE}            => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}                => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}              => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}                => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}                 => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}               => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}              => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}             => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}              => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}                 => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}             => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}               => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}                 => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}            => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}                => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}            => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}                => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}                 => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}           => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}            => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333

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## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence

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```

## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691

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## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}     => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}    => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}   => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}       => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                   => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                 => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}     => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}     => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}          => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}      => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}   => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}       => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}   => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}  => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}  => {eggs=FALSE} 0.1188119 0.7500000
## [25] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}       => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}     => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}      => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE}  => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}          => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE}  => {eggs=FALSE} 0.2178218 0.5641026

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## [50] {backbone=TRUE,fins=FALSE}      => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}           => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE}  => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}      => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}      => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}                 => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}    => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857

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## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}          => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}      => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}          => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}       => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}         => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}           => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}          => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}            => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}       => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}        => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE}      => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE}     => {eggs=FALSE} 0.2673267 0.7500000

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## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476

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## [43] {aquatic=FALSE,tail=TRUE}      => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE}  => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}      => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}     => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}          => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE}  => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}    => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}     => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}         => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}     => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}     => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}               => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}    => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}     => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}               => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759

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## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793

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## [3] {legs=FALSE}      => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}   => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}   => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}  => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}  => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}   => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}      => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}  => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}   => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}      => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                                     rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                     rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}     => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE}  => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031

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## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1]  {milk=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 1.0000000
## [2]  {legs=TRUE,type=mammal}    => {hair=TRUE} 0.3762376 1.0000000
## [3]  {eggs=FALSE,legs=TRUE}      => {hair=TRUE} 0.3663366 0.9736842
## [4]  {toothed=TRUE,legs=TRUE}   => {hair=TRUE} 0.3663366 0.8809524
## [5]  {legs=TRUE,catsize=TRUE}     => {hair=TRUE} 0.2871287 0.7837838
## [6]  {feathers=FALSE,legs=TRUE}  => {hair=TRUE} 0.4158416 0.7241379
## [7]  {airborne=FALSE,legs=TRUE}  => {hair=TRUE} 0.3564356 0.6666667
## [8]  {aquatic=FALSE,legs=TRUE}   => {hair=TRUE} 0.3861386 0.6500000
## [9]  {backbone=TRUE,legs=TRUE}    => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}   => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}        => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}    => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs                                rhs      support  confidence
## [1]  {milk=TRUE,aquatic=FALSE}    => {hair=TRUE} 0.3465347 1.0000000
## [2]  {aquatic=FALSE,type=mammal}    => {hair=TRUE} 0.3465347 1.0000000
## [3]  {eggs=FALSE,aquatic=FALSE}     => {hair=TRUE} 0.3465347 0.9722222
## [4]  {aquatic=FALSE,toothed=TRUE}   => {hair=TRUE} 0.3465347 0.9210526
## [5]  {aquatic=FALSE,catsize=TRUE}    => {hair=TRUE} 0.2574257 0.8387097
## [6]  {feathers=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3861386 0.7647059
## [7]  {airborne=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3267327 0.7173913
## [8]  {aquatic=FALSE,backbone=TRUE}   => {hair=TRUE} 0.3465347 0.6603774
## [9]  {aquatic=FALSE,legs=TRUE}       => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}       => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064

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## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}             => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}               => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}        => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}           => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}       => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                          => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}            => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                     => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}            => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}             => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}           => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}             => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}         => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}         => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}           => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}           => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}             => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}           => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}            => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}           => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}            => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}          => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}            => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}         => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}                => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}            => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}            => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}          => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}                => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}             => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}           => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}                => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}            => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE}         => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}         => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}            => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE}         => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}          => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}           => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}             => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}            => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}            => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}             => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}        => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}          => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}            => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}        => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}        => {legs=FALSE} 0.2178218 0.3098592

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## [51] {predator=TRUE}          => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
##      lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149

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## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}     => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}          => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}           => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}     => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}      => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}         => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}     => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}    => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}      => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}         => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}    => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}          => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}     => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}    => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}       => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}          => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}         => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}      => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence

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## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067

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## [9] 1.414149
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}  => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}  => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}  => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}    => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}  => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs            support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE}  => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {type=fish}                  => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}         => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000

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```

## [4] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}   => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                  => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}            => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}  => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}  => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}  => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}   => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}  => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}   => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}   => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}    => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}  => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}    => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}  => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift

```

[1] 4.391304
[2] 4.391304
[3] 4.391304
[4] 4.391304
[5] 4.391304
[6] 4.391304
[7] 4.391304
[8] 4.132992
[9] 3.436673
[10] 3.345756
[11] 3.345756
[12] 3.293478
[13] 3.245747
[14] 2.702341
[15] 2.634783
[16] 2.549790
[17] 2.542334
[18] 2.415217
[19] 2.332880
[20] 2.311213
[21] 2.254994
[22] 2.195652
[23] 2.139353
[24] 2.026756
[25] 1.951691
[26] 1.951691
[27] 1.881988
[28] 1.808184
[29] 1.796443
[30] 1.780259
[31] 1.756522
[32] 1.729908
[33] 1.707729
[34] 1.688963
[35] 1.672878
[36] 1.633974
[37] 1.588344
[38] 1.568323
[39] 1.523514
[40] 1.520067
[41] 1.516996
[42] 1.463768
[43] 1.463768
[44] 1.437154
[45] 1.424207
[46] 1.420716
[47] 1.414149
[48] 1.386728
[49] 1.383562
[50] 1.360686
[51] 1.333075
[52] 1.324362
[53] 1.317391
[54] 1.317391

```

## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}     => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}     => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}         => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}          => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}     => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}      => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}         => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}     => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}    => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}      => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}        => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}    => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}          => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}      => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}    => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}       => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}          => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}         => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}      => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift

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## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}      => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}       => {legs=FALSE} 0.1287129 0.3939394

```

```

## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish}                  => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}       => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}    => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                  => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}     => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}             => {legs=FALSE} 0.1584158 0.7619048

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```

## [11] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}   => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}   => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}     => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}     => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}       => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}     => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}      => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}      => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}         => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}         => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}    => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}      => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}      => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}               => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE}  => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304

```

```

## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE} => {legs=TRUE} 0.4158416 0.9767442 1.2647585

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## [5] {milk=TRUE}      => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}    => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE} => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE} => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}     => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}=> {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE} => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}     => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}=> {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}      => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE} => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}=> {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}   => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}   => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs      support  confidence

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## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}   => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}   => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs               rhs               support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs               rhs               support  confidence
## [1] {eggs=TRUE,fins=TRUE}         => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}      => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}        => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}           => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}       => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}      => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994

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## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768

##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}  => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545

##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996

##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1683168 0.5312500

##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"

##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}       => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}      => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}    => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}   => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}       => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}       => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}      => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}       => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}          => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}      => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}      => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143

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## [18] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}               => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195

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## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                      => {milk=TRUE} 0.2178218 0.3928571
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187

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## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catSize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250

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## [5] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136

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## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE} => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE} => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE} => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.9756098

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## [12] {eggs=FALSE,backbone=TRUE}    => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}         => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}     => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}   => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}     => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}       => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}   => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                 => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479

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## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}      => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}                 => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                 => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768

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## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}     => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}    => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801

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## [3] 1.389619
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}       => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,tail=TRUE}        => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}    => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.4929577
##      lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,backbone=TRUE}    => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE}=> {milk=TRUE} 0.4059406 0.5189873
##      lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783

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## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE}  => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}        => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}        => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1287129
## [3] {type=bird}                       => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                   => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158

```

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## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catSize=FALSE}  => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}     => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}               => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}         => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catSize=FALSE}      => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catSize=FALSE}  => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catSize=FALSE}  => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catSize=FALSE}     => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catSize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catSize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catSize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catSize=FALSE}  => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}               => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}              => {airborne=TRUE} 0.2178218
## confidence lift

```

```

## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474

```

```

## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}      => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}    => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}  => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}   => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                      rhs      support  confidence

```



```

## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000

```

```

## [5] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"

```

##	lhs	rhs	support	confidence
## [1]	{backbone=FALSE,venomous=FALSE}	=> {tail=FALSE}	0.1386139	1.0000000
## [2]	{backbone=FALSE}	=> {tail=FALSE}	0.1683168	0.9444444
## [3]	{feathers=FALSE,toothed=FALSE}	=> {tail=FALSE}	0.1683168	0.8500000
## [4]	{airborne=FALSE,toothed=FALSE}	=> {tail=FALSE}	0.1089109	0.6111111
## [5]	{feathers=FALSE,eggs=TRUE}	=> {tail=FALSE}	0.1980198	0.5128205
## [6]	{feathers=FALSE,milk=FALSE}	=> {tail=FALSE}	0.1980198	0.5000000
## [7]	{feathers=FALSE,catSize=FALSE}	=> {tail=FALSE}	0.1980198	0.4651163
## [8]	{eggs=TRUE,fins=FALSE}	=> {tail=FALSE}	0.1980198	0.4347826
## [9]	{milk=FALSE,fins=FALSE}	=> {tail=FALSE}	0.1980198	0.4255319
## [10]	{hair=FALSE,feathers=FALSE}	=> {tail=FALSE}	0.1584158	0.4210526
## [11]	{fins=FALSE,catSize=FALSE}	=> {tail=FALSE}	0.1980198	0.4166667
## [12]	{eggs=TRUE,legs=TRUE}	=> {tail=FALSE}	0.1584158	0.4000000
## [13]	{milk=FALSE,legs=TRUE}	=> {tail=FALSE}	0.1584158	0.4000000
## [14]	{feathers=FALSE,fins=FALSE}	=> {tail=FALSE}	0.2475248	0.3906250
## [15]	{legs=TRUE,catSize=FALSE}	=> {tail=FALSE}	0.1584158	0.3902439
## [16]	{airborne=FALSE,catSize=FALSE}	=> {tail=FALSE}	0.1386139	0.3888889
## [17]	{eggs=TRUE,aquatic=FALSE}	=> {tail=FALSE}	0.1089109	0.3793103
## [18]	{eggs=TRUE,airborne=FALSE}	=> {tail=FALSE}	0.1386139	0.3783784
## [19]	{hair=FALSE,fins=FALSE}	=> {tail=FALSE}	0.1584158	0.3720930
## [20]	{milk=FALSE,airborne=FALSE}	=> {tail=FALSE}	0.1386139	0.3684211
## [21]	{milk=FALSE,aquatic=FALSE}	=> {tail=FALSE}	0.1089109	0.3666667
## [22]	{feathers=FALSE,legs=TRUE}	=> {tail=FALSE}	0.2079208	0.3620690
## [23]	{domestic=FALSE,catSize=FALSE}	=> {tail=FALSE}	0.1782178	0.3600000
## [24]	{feathers=FALSE,predator=FALSE}	=> {tail=FALSE}	0.1188119	0.3529412
## [25]	{aquatic=FALSE,catSize=FALSE}	=> {tail=FALSE}	0.1188119	0.3529412
## [26]	{hair=FALSE,airborne=FALSE}	=> {tail=FALSE}	0.1386139	0.3500000
## [27]	{hair=FALSE,legs=TRUE}	=> {tail=FALSE}	0.1188119	0.3333333
## [28]	{feathers=FALSE,domestic=FALSE}	=> {tail=FALSE}	0.2277228	0.3239437
## [29]	{airborne=FALSE,fins=FALSE}	=> {tail=FALSE}	0.1881188	0.3166667
## [30]	{fins=FALSE,domestic=FALSE}	=> {tail=FALSE}	0.2178218	0.3055556
## [31]	{predator=TRUE,fins=FALSE}	=> {tail=FALSE}	0.1287129	0.3023256
## [32]	{fins=FALSE}	=> {tail=FALSE}	0.2475248	0.2976190
## [33]	{predator=TRUE,legs=TRUE}	=> {tail=FALSE}	0.1089109	0.2820513
## [34]	{airborne=FALSE,legs=TRUE}	=> {tail=FALSE}	0.1485149	0.2777778
## [35]	{legs=TRUE,domestic=FALSE}	=> {tail=FALSE}	0.1782178	0.2727273
## [36]	{domestic=FALSE}	=> {tail=FALSE}	0.2277228	0.2613636
## [37]	{predator=TRUE}	=> {tail=FALSE}	0.1386139	0.2500000
## [38]	{venomous=FALSE}	=> {tail=FALSE}	0.2178218	0.2365591
##	lift			
## [1]	3.8846154			
## [2]	3.6688034			
## [3]	3.3019231			
## [4]	2.3739316			
## [5]	1.9921105			
## [6]	1.9423077			
## [7]	1.8067979			
## [8]	1.6889632			
## [9]	1.6530278			
## [10]	1.6356275			
## [11]	1.6185897			
## [12]	1.5538462			
## [13]	1.5538462			
## [14]	1.5174279			

```

## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}       => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}        => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}     => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}       => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}        => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}       => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}        => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}    => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}    => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}     => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}   => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}   => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}       => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}   => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}         => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}     => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}    => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs      support  confidence

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## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
## lift
## [1] 1.174419
## [2] 1.095661
## lhs rhs support confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
## lhs rhs support confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.371041
## lhs rhs support confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103

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## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE} => {legs=FALSE} 0.1584158 0.4444444

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## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652

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## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792

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## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}     => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}   => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}   => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994

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## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}    => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}     => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift

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## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                        => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}             => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}             => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}         => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}           => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}           => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}        => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}        => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}        => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}            => {breathes=FALSE} 0.2079208

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## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}          => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}      => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                     => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399

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## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}                => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}            => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}            => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}                 => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}               => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}                 => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}            => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}               => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}                => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}            => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}           => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}            => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}            => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}                => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}           => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}              => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}           => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}             => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}            => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}                => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}               => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE}          => {breathes=TRUE} 0.1089109 0.6111111 0.7715278

##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

##      lhs                      rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}     => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198

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## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
## lhs rhs support
## [1] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
## lhs rhs support
## [1] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524

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## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs          support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {type=fish}                      => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}             => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}              => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}             => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}       => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}           => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}            => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}       => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}            => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}         => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}           => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}         => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208

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## [25] {feathers=FALSE,milk=FALSE}    => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}     => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}      => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}  => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}       => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}        => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                   => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245

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## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}  => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}  => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}  => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}  => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

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##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}             => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}               => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}            => {breathes=FALSE} 0.1287129 0.6500000

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## [4] {eggs=TRUE,aquatic=TRUE}    => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}   => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}   => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}   => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}       => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}           => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}           => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}          => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}              => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}          => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs                                support
## [1] {type=fish}                        => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}               => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}               => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}               => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}              => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}               => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}           => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}              => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}         => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}             => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}              => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}         => {breathes=FALSE} 0.1980198

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## [17] {eggs=TRUE,aquatic=TRUE}      => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}     => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}     => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}   => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}    => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}   => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}    => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}     => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}=> {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}=> {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}=> {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}       => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}=> {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}=> {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}=> {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}=> {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}=> {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}=> {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}=> {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                  => {breathes=FALSE} 0.1386139
##
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426

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## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}        => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}         => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}    => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}       => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}        => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}    => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}   => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}    => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}        => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}   => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}       => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}   => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}    => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}     => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}        => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}       => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE}  => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129

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##      confidence lift
## [1] 0.3703704  1.781305
## [2] 0.3636364  1.748918
## [3] 0.3518519  1.692240
## [4] 0.3000000  1.442857
## [5] 0.2941176  1.414566
## [6] 0.2816901  1.354795
## [7] 0.2500000  1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}       => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}      => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}         => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890

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## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}   => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}  => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}  => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}     => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}     => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                  => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}        => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}       => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}       => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}    => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1188119

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## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905

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## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}       => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}       => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}   => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}  => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}  => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}  => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}   => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278

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##      lhs                                rhs                                support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}     => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704  1.781305
## [2] 0.3636364  1.748918
## [3] 0.3518519  1.692240
## [4] 0.3000000  1.442857
## [5] 0.2941176  1.414566
## [6] 0.2816901  1.354795
## [7] 0.2500000  1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}         => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}           => {breathes=FALSE} 0.1584158

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## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}                => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}                 => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}               => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}              => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}              => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}              => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}                 => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}             => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}                => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}                 => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}              => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}              => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}             => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}             => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}                => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}            => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support

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## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925

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## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}        => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}         => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}    => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}        => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}         => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}    => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}   => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}     => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}    => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}        => {breathes=TRUE} 0.6039604 0.8133333 1.0268333

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## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}   => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                rhs                                support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}        => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}     => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566

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## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}       => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}          => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}          => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}         => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}        => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}         => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}            => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}        => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349

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## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                          => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}                 => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}                 => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}                 => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}              => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}                => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}                 => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}             => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}                 => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}              => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}               => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}               => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}            => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}                => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}                => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}               => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}             => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}               => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}             => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}             => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}              => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}             => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}             => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}              => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}              => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}               => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}              => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}           => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}                 => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}                  => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}             => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}              => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}             => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}              => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}         => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}         => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}           => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                             => {breathes=FALSE} 0.1386139

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##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE} => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal} => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE} => {breathes=TRUE} 0.4257426 1.0000000 1.2625000

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## [7] {aquatic=FALSE} => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE} => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE} => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE} => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE} => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE} => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE} => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE} => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE} => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE} => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE} => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE} => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                rhs                                support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158

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## [4] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
## lhs rhs support
## [1] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}   => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}   => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}  => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}   => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}     => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316

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## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {catsize=FALSE,type=bird} => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158

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## [39] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}       => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}      => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}     => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                 => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017

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## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}       => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}        => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}    => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}       => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}   => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}        => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}         => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}   => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}    => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift

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## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218 0.5641026

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## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919

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## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}          => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.1287129
## [3] {type=bird}                         => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                     => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}       => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}      => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}       => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}           => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}           => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}          => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}         => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}          => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}           => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}          => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}      => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                    => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}               => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}               => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}           => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}         => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}          => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}              => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}          => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}              => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}             => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}          => {airborne=TRUE} 0.2079208

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## [33] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}          => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}         => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}            => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}         => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}            => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}        => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}       => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}  => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}            => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}         => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}        => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}        => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}       => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}             => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}            => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}            => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                   => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                  => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667

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```

## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197

```

	lhs	rhs	support	confidence	lift
## [1]	{type=fish}	=> {airborne=FALSE}	0.1287129	1.0000000	1.3116883
## [2]	{fins=TRUE}	=> {airborne=FALSE}	0.1683168	1.0000000	1.3116883
## [3]	{breathes=FALSE}	=> {airborne=FALSE}	0.2079208	1.0000000	1.3116883
## [4]	{legs=FALSE}	=> {airborne=FALSE}	0.2277228	1.0000000	1.3116883
## [5]	{toothed=TRUE}	=> {airborne=FALSE}	0.5841584	0.9672131	1.2686821
## [6]	{eggs=FALSE}	=> {airborne=FALSE}	0.3960396	0.9523810	1.2492270
## [7]	{milk=TRUE}	=> {airborne=FALSE}	0.3861386	0.9512195	1.2477035
## [8]	{type=mammal}	=> {airborne=FALSE}	0.3861386	0.9512195	1.2477035
## [9]	{catsize=TRUE}	=> {airborne=FALSE}	0.4059406	0.9318182	1.2222550
## [10]	{predator=TRUE}	=> {airborne=FALSE}	0.4851485	0.8750000	1.1477273
## [11]	{aquatic=TRUE}	=> {airborne=FALSE}	0.3069307	0.8611111	1.1295094
## [12]	{hair=TRUE}	=> {airborne=FALSE}	0.3663366	0.8604651	1.1286620
## [13]	{backbone=TRUE}	=> {airborne=FALSE}	0.6435644	0.7831325	1.0272258
## [14]	{tail=FALSE}	=> {airborne=FALSE}	0.1980198	0.7692308	1.0089910
## [15]	{tail=TRUE}	=> {airborne=FALSE}	0.5643564	0.7600000	0.9968831
## [16]	{aquatic=FALSE}	=> {airborne=FALSE}	0.4554455	0.7076923	0.9282717
## [17]	{hair=FALSE}	=> {airborne=FALSE}	0.3960396	0.6896552	0.9046126
## [18]	{backbone=FALSE}	=> {airborne=FALSE}	0.1188119	0.6666667	0.8744589
## [19]	{milk=FALSE}	=> {airborne=FALSE}	0.3762376	0.6333333	0.8307359
## [20]	{eggs=TRUE}	=> {airborne=FALSE}	0.3663366	0.6271186	0.8225842
## [21]	{predator=FALSE}	=> {airborne=FALSE}	0.2772277	0.6222222	0.8161616
## [22]	{toothed=FALSE}	=> {airborne=FALSE}	0.1782178	0.4500000	0.5902597

```

##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628

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## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs            support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952

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## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1287129
## [3] {type=bird}                     => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                 => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}    => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}        => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}       => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}        => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                  => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}            => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}           => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}         => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1683168

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## [27] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}           => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}       => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}           => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}          => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}          => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}        => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}            => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}        => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}      => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}        => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}       => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}       => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}      => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}        => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}            => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}           => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                  => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                 => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833

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## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}       => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}        => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717

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## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}       => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538

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## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109

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## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {milk=FALSE} 0.1287129 1.0000000
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000
## [3] {type=bird} => {milk=FALSE} 0.1980198 1.0000000
## [4] {feathers=TRUE} => {milk=FALSE} 0.1980198 1.0000000
## [5] {breathes=FALSE} => {milk=FALSE} 0.2079208 1.0000000
## [6] {legs=FALSE,catsize=FALSE} => {milk=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE} => {milk=FALSE} 0.1881188 1.0000000
## [8] {hair=FALSE,airborne=TRUE} => {milk=FALSE} 0.1782178 1.0000000
## [9] {hair=FALSE,tail=FALSE} => {milk=FALSE} 0.1584158 1.0000000
## [10] {aquatic=TRUE,catsize=FALSE} => {milk=FALSE} 0.2277228 1.0000000
## [11] {toothed=FALSE,catsize=FALSE} => {milk=FALSE} 0.3069307 1.0000000
## [12] {hair=FALSE,toothed=FALSE} => {milk=FALSE} 0.3465347 1.0000000
## [13] {hair=FALSE,predator=FALSE} => {milk=FALSE} 0.2178218 1.0000000
## [14] {hair=FALSE,catsize=FALSE} => {milk=FALSE} 0.4356436 1.0000000
## [15] {eggs=TRUE,catsize=FALSE} => {milk=FALSE} 0.4554455 1.0000000
## [16] {hair=FALSE,eggs=TRUE} => {milk=FALSE} 0.5346535 1.0000000
## [17] {hair=FALSE,aquatic=FALSE} => {milk=FALSE} 0.2574257 1.0000000
## [18] {hair=FALSE,legs=TRUE} => {milk=FALSE} 0.3564356 1.0000000
## [19] {hair=FALSE,fins=FALSE} => {milk=FALSE} 0.4257426 1.0000000
## [20] {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1.0000000

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## [21] {eggs=TRUE,aquatic=FALSE}      => {milk=FALSE} 0.2871287 1.0000000
## [22] {eggs=TRUE}                    => {milk=FALSE} 0.5742574 0.9830508
## [23] {hair=FALSE}                   => {milk=FALSE} 0.5544554 0.9655172
## [24] {predator=TRUE,catsize=FALSE}  => {milk=FALSE} 0.2574257 0.9285714
## [25] {airborne=TRUE}                => {milk=FALSE} 0.2178218 0.9166667
## [26] {aquatic=TRUE,fins=FALSE}      => {milk=FALSE} 0.1683168 0.8947368
## [27] {legs=FALSE}                  => {milk=FALSE} 0.1980198 0.8695652
## [28] {domestic=FALSE,catsize=FALSE} => {milk=FALSE} 0.4257426 0.8600000
## [29] {aquatic=TRUE}                => {milk=FALSE} 0.2970297 0.8333333
## [30] {tail=FALSE,domestic=FALSE}   => {milk=FALSE} 0.1881188 0.8260870
## [31] {tail=FALSE}                  => {milk=FALSE} 0.1980198 0.7692308
## [32] {fins=TRUE}                   => {milk=FALSE} 0.1287129 0.7647059
## [33] {predator=TRUE}               => {milk=FALSE} 0.3366337 0.6071429
## [34] {fins=FALSE}                  => {milk=FALSE} 0.4653465 0.5595238
## [35] {tail=TRUE}                   => {milk=FALSE} 0.3960396 0.5333333
## [36] {backbone=TRUE}               => {milk=FALSE} 0.4158416 0.5060241
## [37] {aquatic=FALSE}               => {milk=FALSE} 0.2970297 0.4615385
## [38] {toothed=TRUE}                => {milk=FALSE} 0.2079208 0.3442623
##      lift
## [1] 1.6833333
## [2] 1.6833333
## [3] 1.6833333
## [4] 1.6833333
## [5] 1.6833333
## [6] 1.6833333
## [7] 1.6833333
## [8] 1.6833333
## [9] 1.6833333
## [10] 1.6833333
## [11] 1.6833333
## [12] 1.6833333
## [13] 1.6833333
## [14] 1.6833333
## [15] 1.6833333
## [16] 1.6833333
## [17] 1.6833333
## [18] 1.6833333
## [19] 1.6833333
## [20] 1.6833333
## [21] 1.6833333
## [22] 1.6548023
## [23] 1.6252874
## [24] 1.5630952
## [25] 1.5430556
## [26] 1.5061404
## [27] 1.4637681
## [28] 1.4476667
## [29] 1.4027778
## [30] 1.3905797
## [31] 1.2948718
## [32] 1.2872549
## [33] 1.0220238
## [34] 0.9418651
## [35] 0.8977778

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## [36] 0.8518072
## [37] 0.7769231
## [38] 0.5795082
##      lhs                rhs      support  confidence lift
## [1] {toothed=TRUE}  => {milk=TRUE} 0.3960396 0.6557377 1.615354
## [2] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728 1.246914
## [3] {predator=TRUE}  => {milk=TRUE} 0.2178218 0.3928571 0.967770
##      lhs                rhs      support  confidence lift
## [1] {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1 1.683333
##      lhs                rhs      support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {milk=FALSE} 0.2574257 0.9285714
##      lift
## [1] 1.563095
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support
## [1] {type=bird}                => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}             => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}  => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}  => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}  => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}  => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}       => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}       => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}  => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}   => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}    => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}     => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                 => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248

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## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE} => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE} => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE} => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE} => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE} => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE} => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000

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## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}              => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}               => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}              => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}              => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}             => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}           => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}               => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}           => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}            => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}             => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE}           => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}            => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}            => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}            => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}               => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}                => {toothed=TRUE} 0.1980198 0.3389831 0.5612670

##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333

##      lhs                      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838

##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634

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## [5] 1.076838
##      lhs                                     rhs               support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}     => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}     => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}      => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                     rhs               support  confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}        => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                     rhs               support  confidence
## [1] {hair=FALSE,airborne=TRUE}      => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}        => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}            => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}           => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}            => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}       => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}       => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}       => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                     rhs               support  confidence

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## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198

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## [36] {eggs=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}  => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}  => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}   => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}   => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}  => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}   => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}  => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}             => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}            => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}            => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273

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## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352

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## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857

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## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                                support    confidence
## [1] {tail=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}       => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744

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## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762

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## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE}=> {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}=> {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}=> {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE}=> {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE}=> {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837

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## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs                                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}   => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}       => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}      => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}          => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}        => {feathers=TRUE} 0.1980198

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## [25] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}         => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}        => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                  => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE}      => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE}  => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}      => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                => {feathers=TRUE} 0.1386139

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## [79] {venomous=FALSE}          => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}          => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902

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## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}  => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}   => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}  => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}  => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}      => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}     => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}      => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185

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## [3] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1386139 0.2295082
## lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1089109
## confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
## lhs rhs support confidence
## [1] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}=> {feathers=TRUE} 0.1386139 0.2800000
## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198

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## [5] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs          support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs          support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4255319

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## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154

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## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}     => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198

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## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109

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## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}        => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                  => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                  => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                  => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077

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## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476

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## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE}          => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}            => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}           => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}       => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}            => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}       => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}           => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}       => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}          => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE}           => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}             => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.2800000
##      lift

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## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865

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## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE}   => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}    => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379

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##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs      support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}       => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                          => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}        => {feathers=TRUE} 0.1980198

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## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109

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## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}           => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}       => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                 => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                 => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                 => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310

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## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}      => {feathers=FALSE} 0.1683168 1.0000000 1.2469136

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## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE} => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE} => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE} => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE} => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE} => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE} => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE} => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE} => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE} => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE} => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE} => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE} => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE} => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE} => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE} => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
## lhs rhs support confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
## lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359

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## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs      support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758

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```

## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758

## lhs rhs support confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276

## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379

## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276

## lift
## [1] 3.672727

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```

## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs      support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606

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## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}           => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}        => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}            => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}        => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}            => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}           => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}        => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}        => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}           => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}        => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}               => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}           => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}           => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}            => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}           => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}                => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}           => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}                => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}               => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}               => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}            => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}               => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}            => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}           => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}           => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}              => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}           => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}               => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}              => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}          => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}          => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}           => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}               => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}              => {feathers=TRUE} 0.1980198

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## [46] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}   => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}   => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}   => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}  => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}   => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}   => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}              => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}             => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}             => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381

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## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883

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## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}                => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}                 => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE}            => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE}            => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}                 => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}                  => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}                 => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}                   => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}             => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}                => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}              => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}               => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}               => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}             => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}              => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}               => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}                    => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}                   => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}                    => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}                  => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}              => {feathers=FALSE} 0.1980198 0.5000000 0.6234568

##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082

##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016

##      lhs                      rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1089109

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## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                                support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE}          => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}               => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}               => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}               => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}          => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}         => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}            => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,legs=TRUE}              => {feathers=TRUE} 0.1980198 0.5555556

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## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE}  => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
## lhs      rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}   => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs      rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.5128205

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## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs                                rhs                                support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs                                rhs                                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198

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## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                          => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}             => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}          => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}          => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}              => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}             => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}         => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}            => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}              => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}         => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}                 => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}             => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}             => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}          => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}              => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}             => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}                  => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}             => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}            => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}                  => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}                  => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}                  => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}              => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}                  => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}              => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}             => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}             => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}                 => {feathers=TRUE} 0.1980198

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## [35] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}         => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}        => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                   => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}     => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}               => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}               => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273

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## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590

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## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667

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## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                                support    confidence
## [1] {tail=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}       => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730

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## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000

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## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762

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## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs                                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}      => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}          => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}         => {feathers=TRUE} 0.1980198

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## [24] {milk=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}           => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}       => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}       => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}          => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}       => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}      => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}          => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}           => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                   => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}          => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}       => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}      => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139

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## [78]	{aquatic=FALSE}	=> {feathers=TRUE}	0.1386139
## [79]	{venomous=FALSE}	=> {feathers=TRUE}	0.1980198
## [80]	{domestic=FALSE}	=> {feathers=TRUE}	0.1683168
##	confidence lift		
## [1]	1.0000000	5.0500000	
## [2]	0.9090909	4.5909091	
## [3]	0.8888889	4.4888889	
## [4]	0.8888889	4.4888889	
## [5]	0.8888889	4.4888889	
## [6]	0.8695652	4.3913043	
## [7]	0.7272727	3.6727273	
## [8]	0.7272727	3.6727273	
## [9]	0.7272727	3.6727273	
## [10]	0.7272727	3.6727273	
## [11]	0.6060606	3.0606061	
## [12]	0.5714286	2.8857143	
## [13]	0.5555556	2.8055556	
## [14]	0.5555556	2.8055556	
## [15]	0.5555556	2.8055556	
## [16]	0.5405405	2.7297297	
## [17]	0.5384615	2.7192308	
## [18]	0.5238095	2.6452381	
## [19]	0.5185185	2.6185185	
## [20]	0.5128205	2.5897436	
## [21]	0.5128205	2.5897436	
## [22]	0.5128205	2.5897436	
## [23]	0.5128205	2.5897436	
## [24]	0.5128205	2.5897436	
## [25]	0.5000000	2.5250000	
## [26]	0.5000000	2.5250000	
## [27]	0.5000000	2.5250000	
## [28]	0.5000000	2.5250000	
## [29]	0.4827586	2.4379310	
## [30]	0.4761905	2.4047619	
## [31]	0.4761905	2.4047619	
## [32]	0.4761905	2.4047619	
## [33]	0.4666667	2.3566667	
## [34]	0.4651163	2.3488372	
## [35]	0.4545455	2.2954545	
## [36]	0.4347826	2.1956522	
## [37]	0.4255319	2.1489362	
## [38]	0.4230769	2.1365385	
## [39]	0.4230769	2.1365385	
## [40]	0.3846154	1.9423077	
## [41]	0.3846154	1.9423077	
## [42]	0.3783784	1.9108108	
## [43]	0.3773585	1.9056604	
## [44]	0.3703704	1.8703704	
## [45]	0.3571429	1.8035714	
## [46]	0.3508772	1.7719298	
## [47]	0.3500000	1.7675000	
## [48]	0.3448276	1.7413793	
## [49]	0.3448276	1.7413793	
## [50]	0.3414634	1.7243902	

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## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615

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## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
## lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
## lhs rhs support confidence
## [1] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198

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## [4] {milk=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                rhs                support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                rhs                support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667

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## [8] {milk=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs      rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs      rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455

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## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}     => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198

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## [13] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}   => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}       => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                 => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198

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## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}        => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                   => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                  => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                  => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385

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## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}       => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}       => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}  => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947

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## [13] {aquatic=FALSE} => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE} => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE} => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE} => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE} => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE} => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE} => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE} => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs          support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs          support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs          support  confidence
## [1] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000

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```

## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000

## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198

## confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947

## lhs rhs support confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758

## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562

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```

## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE}   => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}    => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370

```

```

## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs      support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish} => {breathes=FALSE} 0.1287129

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```

## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429

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## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}       => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}   => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}  => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682

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## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}    => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE}=> {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs               support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs               support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs               support
## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}      => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224

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## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}       => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}             => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}             => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}          => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}          => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}          => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}             => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}        => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}         => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}            => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}        => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349

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## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}    => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}    => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                     => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                   => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}       => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}           => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}      => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                    => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                     => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}     => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}    => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}       => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}   => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}   => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}       => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}           => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}       => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}       => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307

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## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE} => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE} => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE} => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE} => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE} => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE} => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE} => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE} => {catsize=TRUE} 0.1188119
## confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932

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## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}    => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}      => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}    => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}     => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149

##      lift
## [1] 2.086777

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## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327 0.5500000
##      lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}     => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}     => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}     => {catsize=TRUE} 0.2376238 0.7058824
##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}    => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307 0.7560976
##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}        => {catsize=TRUE} 0.1980198

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## [2] {predator=TRUE,type=mammal}      => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}        => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}       => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}       => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}       => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}     => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                     => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                   => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}      => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}        => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}            => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}       => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                    => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}       => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}       => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                     => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}     => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}         => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}     => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}     => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}        => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}    => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}    => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}        => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}            => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}        => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}        => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}   => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}       => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}           => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}   => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3861386

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## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                  => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                   => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                     => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                     => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140

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## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}    => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}   => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}      => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}    => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}    => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035

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## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##      lhs                                rhs            support  confidence
## [1] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327 0.5500000
##      lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
##      lhs                                rhs            support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}       => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}           => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}       => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238 0.7058824
##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
##      lhs                                rhs            support  confidence
## [1] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}      => {catsize=TRUE} 0.3069307 0.7560976
##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE}  => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}         => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}           => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}         => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}      => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                  => {predator=TRUE} 0.1683168

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## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE} => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE} => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE} => {predator=TRUE} 0.3861386
## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850

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## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}    => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}  => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971

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##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}      => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,toothed=TRUE}  => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}      => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs      support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}   => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}      => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}   => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}  => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift

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## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs            support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}      => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}  => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}        => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}       => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}     => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                  => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}       => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}        => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}      => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                    => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}        => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}         => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}      => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}      => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}      => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}       => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE}  => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}    => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}   => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                  => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}  => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}       => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}      => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}       => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}   => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}           => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}       => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}        => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}       => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}            => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                 => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                    => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}     => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                     => {predator=TRUE} 0.3861386

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## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103

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## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                                rhs                support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                                rhs                support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                                rhs                support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                                rhs                support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}    => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}     => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}          => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs                support  confidence
## [1] {milk=FALSE,toothed=TRUE}      => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE}     => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}          => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs                support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}     => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}      => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}       => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4455446

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## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
## lhs rhs support confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
## lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal} => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE} => {catsize=TRUE} 0.3168317
## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356

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## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}    => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}       => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}   => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}   => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}       => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}           => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}       => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}       => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}  => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}  => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}      => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}          => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}  => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                 => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                  => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                    => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                    => {catsize=TRUE} 0.1188119
## confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807

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## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}   => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}      => {catsize=FALSE} 0.4752475 0.8000000 1.4175439

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## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}  => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}     => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE} => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}      => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}   => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal}     => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}       => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}      => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE}     => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE}    => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##
## lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}        => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}    => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}        => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327 0.5500000
##
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214

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## [8] 1.262500
##      lhs                                rhs                support  confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
##      lhs                                rhs                support  confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {type=fish}                        => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}             => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}             => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}           => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}            => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}       => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}            => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}         => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}           => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}         => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}         => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}          => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}           => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168

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## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}   => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}         => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}          => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}      => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                     => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177

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## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE} => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}  => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE} => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                      rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}     => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208

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## [5] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}           => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}             => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}               => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}               => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}            => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}            => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}          => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}              => {breathes=FALSE} 0.1980198 0.3703704

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## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {airborne=FALSE} 0.1287129
## [2] {fins=TRUE} => {airborne=FALSE} 0.1683168
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208
## [4] {legs=FALSE} => {airborne=FALSE} 0.2277228
## [5] {aquatic=TRUE,toothed=TRUE} => {airborne=FALSE} 0.2277228
## [6] {feathers=FALSE,aquatic=TRUE} => {airborne=FALSE} 0.2970297
## [7] {milk=TRUE,predator=TRUE} => {airborne=FALSE} 0.2178218
## [8] {predator=TRUE,type=mammal} => {airborne=FALSE} 0.2178218
## [9] {eggs=FALSE,predator=TRUE} => {airborne=FALSE} 0.2277228
## [10] {hair=TRUE,predator=TRUE} => {airborne=FALSE} 0.1980198
## [11] {feathers=FALSE,catsize=TRUE} => {airborne=FALSE} 0.3762376
## [12] {predator=TRUE,toothed=TRUE} => {airborne=FALSE} 0.3663366
## [13] {hair=FALSE,toothed=TRUE} => {airborne=FALSE} 0.2277228
## [14] {eggs=TRUE,toothed=TRUE} => {airborne=FALSE} 0.1980198
## [15] {milk=FALSE,toothed=TRUE} => {airborne=FALSE} 0.2079208
## [16] {feathers=FALSE,predator=TRUE} => {airborne=FALSE} 0.4554455
## [17] {feathers=FALSE,backbone=TRUE} => {airborne=FALSE} 0.6039604
## [18] {toothed=TRUE} => {airborne=FALSE} 0.5841584
## [19] {predator=TRUE,catsize=TRUE} => {airborne=FALSE} 0.2673267
## [20] {feathers=FALSE,tail=TRUE} => {airborne=FALSE} 0.5247525
## [21] {eggs=FALSE} => {airborne=FALSE} 0.3960396

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## [22] {milk=TRUE} => {airborne=FALSE} 0.3861386
## [23] {type=mammal} => {airborne=FALSE} 0.3861386
## [24] {hair=FALSE,feathers=FALSE} => {airborne=FALSE} 0.3564356
## [25] {catsize=TRUE} => {airborne=FALSE} 0.4059406
## [26] {predator=TRUE,tail=FALSE} => {airborne=FALSE} 0.1287129
## [27] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [28] {feathers=FALSE,domestic=FALSE} => {airborne=FALSE} 0.6336634
## [29] {predator=TRUE} => {airborne=FALSE} 0.4851485
## [30] {aquatic=TRUE} => {airborne=FALSE} 0.3069307
## [31] {hair=TRUE} => {airborne=FALSE} 0.3663366
## [32] {venomous=FALSE,tail=FALSE} => {airborne=FALSE} 0.1782178
## [33] {backbone=TRUE,domestic=FALSE} => {airborne=FALSE} 0.5544554
## [34] {backbone=TRUE} => {airborne=FALSE} 0.6435644
## [35] {tail=FALSE} => {airborne=FALSE} 0.1980198
## [36] {tail=TRUE} => {airborne=FALSE} 0.5643564
## [37] {aquatic=FALSE} => {airborne=FALSE} 0.4554455
## [38] {hair=FALSE} => {airborne=FALSE} 0.3960396
## [39] {backbone=FALSE} => {airborne=FALSE} 0.1188119
## [40] {milk=FALSE} => {airborne=FALSE} 0.3762376
## [41] {eggs=TRUE} => {airborne=FALSE} 0.3663366
## [42] {predator=FALSE} => {airborne=FALSE} 0.2772277
## [43] {toothed=FALSE} => {airborne=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 1.3116883
## [2] 1.0000000 1.3116883
## [3] 1.0000000 1.3116883
## [4] 1.0000000 1.3116883
## [5] 1.0000000 1.3116883
## [6] 1.0000000 1.3116883
## [7] 1.0000000 1.3116883
## [8] 1.0000000 1.3116883
## [9] 1.0000000 1.3116883
## [10] 1.0000000 1.3116883
## [11] 1.0000000 1.3116883
## [12] 1.0000000 1.3116883
## [13] 1.0000000 1.3116883
## [14] 1.0000000 1.3116883
## [15] 1.0000000 1.3116883
## [16] 0.9787234 1.2837800
## [17] 0.9682540 1.2700474
## [18] 0.9672131 1.2686821
## [19] 0.9642857 1.2648423
## [20] 0.9636364 1.2639906
## [21] 0.9523810 1.2492270
## [22] 0.9512195 1.2477035
## [23] 0.9512195 1.2477035
## [24] 0.9473684 1.2426521
## [25] 0.9318182 1.2222550
## [26] 0.9285714 1.2179963
## [27] 0.9178082 1.2038783
## [28] 0.9014085 1.1823669
## [29] 0.8750000 1.1477273
## [30] 0.8611111 1.1295094
## [31] 0.8604651 1.1286620

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## [32] 0.8181818 1.0731995
## [33] 0.7887324 1.0345711
## [34] 0.7831325 1.0272258
## [35] 0.7692308 1.0089910
## [36] 0.7600000 0.9968831
## [37] 0.7076923 0.9282717
## [38] 0.6896552 0.9046126
## [39] 0.6666667 0.8744589
## [40] 0.6333333 0.8307359
## [41] 0.6271186 0.8225842
## [42] 0.6222222 0.8161616
## [43] 0.4500000 0.5902597

##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [2] {feathers=TRUE} => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [3] {toothed=FALSE} => {airborne=TRUE} 0.2178218 0.5500000 2.3145833
## [4] {aquatic=FALSE} => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [5] {venomous=FALSE} => {airborne=TRUE} 0.2178218 0.2365591 0.9955197

##      lhs      rhs      support
## [1] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [2] {venomous=FALSE,tail=FALSE}    => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 0.9178082 1.203878
## [2] 0.8181818 1.073200

## [1] "Número de reglas con consecuente negado"

##      lhs      rhs      support
## [1] {catsize=FALSE,type=bird}    => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird}                  => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}               => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}           => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}          => {airborne=TRUE} 0.1782178

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## [29] {hair=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}           => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}          => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}          => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}        => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}            => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}        => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}       => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}      => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}        => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}       => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}       => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}      => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}        => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}            => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}           => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}           => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                  => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                 => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878

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## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}       => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589

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## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167

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## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs            support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168

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## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857  3.005952
## [2] 0.5769231  2.427885
## [3] 0.5769231  2.427885
## [4] 0.5172414  2.176724
## [5] 0.5000000  2.104167
## [6] 0.4358974  1.834402
## [7] 0.4146341  1.744919
## [8] 0.4146341  1.744919
## [9] 0.3823529  1.609069
##      lhs                                rhs                support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}   => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                  => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}        => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}         => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}         => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}            => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}          => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}             => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}        => {backbone=FALSE} 0.1386139

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## [23] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}        => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}   => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                  => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}   => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}              => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611

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## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}                => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}                 => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}                  => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}              => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}                   => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}                 => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}               => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}                   => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}                => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}              => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}              => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}                 => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}                   => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}              => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}             => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}             => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}              => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}                   => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}              => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}            => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}             => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}   => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119

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## [3] {eggs=TRUE,aquatic=FALSE}      => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000  3.857639
## [2] 0.4000000  2.244444
## [3] 0.3793103  2.128352
## [4] 0.3529412  1.980392
## [5] 0.2352941  1.320261
## [6] 0.2075472  1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000  5.050000
## [2] 0.4500000  2.525000
## [3] 0.4358974  2.445869
## [4] 0.3953488  2.218346
## [5] 0.3684211  2.067251
## [6] 0.2812500  1.578125
## [7] 0.2413793  1.354406
## [8] 0.2394366  1.343505
## [9] 0.2352941  1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs                                support
## [1] {tail=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168

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## [5] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE} => {backbone=FALSE} 0.1683168

```



```

## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873

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## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}   => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109

```

```

## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
## lhs rhs support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}     => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}   => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}  => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168

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## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}           => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}               => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}              => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}              => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}           => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}          => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}              => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}       => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}           => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                     => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}           => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}           => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}           => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}              => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}            => {backbone=FALSE} 0.1089109

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## [21] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}  => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}   => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                  => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}   => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}              => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691

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## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}     => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}    => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}    => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}       => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}    => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}   => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}   => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}    => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}    => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}   => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}    => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support

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## [1] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
## lhs rhs support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}     => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}      => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}   => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168

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## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178

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## [20] {eggs=TRUE,aquatic=FALSE}      => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}         => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}        => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}               => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889

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## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}    => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}   => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}    => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}    => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219

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##      lhs                                rhs                                support
## [1] {aquatic=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}          => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}           => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}          => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}           => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}           => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}           => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}           => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}              => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}           => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}            => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}               => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}             => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}                 => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}            => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}            => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs                                support
## [1] {tail=FALSE,catsize=FALSE}          => {backbone=FALSE} 0.1584158

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## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168

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## [19] {milk=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}  => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}  => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}   => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}  => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                 => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}  => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}   => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}=> {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}=> {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}=> {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}   => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}             => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392

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```

## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406

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```

## [5] 1.105219
##      lhs                                rhs                                support
## [1] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}        => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}        => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs                                support

```

```

## [1] {tail=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}         => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}             => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}                => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}               => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}               => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}            => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}           => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}            => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}               => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}         => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}             => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                       => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}            => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}            => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}            => {backbone=FALSE} 0.1188119

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## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}      => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}        => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}        => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}               => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269

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## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}        => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}    => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}         => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}     => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}         => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}    => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}    => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}       => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}         => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}    => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}   => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}   => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}    => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}         => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}    => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}   => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}    => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133

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## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs                                support
## [1] {aquatic=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}          => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}           => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}        => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}       => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}          => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}           => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}            => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}           => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}            => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}       => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}       => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}              => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}            => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}            => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}               => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}             => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}                 => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}            => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}            => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551

```

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##      lhs                                rhs                                support
## [1] {tail=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}         => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}          => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}            => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}            => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}         => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}            => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                   => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}        => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}         => {backbone=FALSE} 0.1683168

```

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## [17] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}           => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}           => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}            => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}      => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}       => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                     => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                 => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269

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## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}  => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}  => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611

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## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs                                support
## [1] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}       => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}        => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168

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## [8] 1.662551
##      lhs                                rhs                                support
## [1] {tail=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}          => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}           => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                        => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                          => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}           => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}       => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                     => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}           => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}            => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}            => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}             => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}           => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}          => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                         => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}            => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}           => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}          => {aquatic=TRUE} 0.2574257

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## [16] {milk=FALSE,predator=TRUE}      => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}      => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}     => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}      => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}     => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}     => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}   => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}      => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}     => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}          => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}         => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE}  => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                    => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}                => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                 => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                 => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957

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## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}       => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}        => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614

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## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}    => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}    => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}      => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}          => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175

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## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}          => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}             => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}         => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}                => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}                => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}                => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}                   => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}              => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}              => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}              => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}              => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}          => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}                => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}            => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}                 => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                         => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}                => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}                 => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}            => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}             => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}            => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}            => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}              => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}              => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}                   => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}             => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}               => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}              => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}               => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}                    => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}               => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}                   => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}              => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}                => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}               => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}                 => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}            => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}               => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}            => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}                => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}            => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}           => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}            => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}           => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}              => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}           => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}           => {fins=TRUE} 0.1683168 0.2615385

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## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                    => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054

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## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}    => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}     => {fins=FALSE} 0.4257426 0.7413793 0.8914204

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## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957

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## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs rhs support confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980

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## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556

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## [4] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054

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## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                    => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}         => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}         => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}       => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}        => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}         => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                  => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}          => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}           => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}      => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}      => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}        => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}        => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}             => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}         => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}        => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}         => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}              => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}         => {fins=TRUE} 0.1287129 0.3333333

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## [33] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109

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## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}       => {fins=FALSE} 0.7623762 0.9871795 1.1869658

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## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}    => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}   => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}  => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}     => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}     => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}   => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}  => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}  => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}         => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}         => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1485149 0.1851852
##
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.1851852

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## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562

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## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}  => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941

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## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304

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## [4] {hair=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs      rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs      rhs      support  confidence
## [1] {type=fish}                  => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}   => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}   => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1485149 0.6521739

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## [15] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}              => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}    => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}     => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176

```

[2] 5.516807
[3] 5.516807
[4] 5.516807
[5] 5.281046
[6] 5.003096
[7] 5.003096
[8] 4.950980
[9] 4.827206
[10] 4.690402
[11] 4.391304
[12] 4.193772
[13] 3.960784
[14] 3.874680
[15] 3.861765
[16] 3.861765
[17] 3.677871
[18] 3.677871
[19] 3.656109
[20] 3.366667
[21] 3.366667
[22] 3.258065
[23] 2.970588
[24] 2.345201
[25] 2.227941
[26] 2.121849
[27] 2.087440
[28] 2.087440
[29] 2.032508
[30] 2.025401
[31] 1.980392
[32] 1.980392
[33] 1.930882
[34] 1.930882
[35] 1.838936
[36] 1.838936
[37] 1.828054
[38] 1.828054
[39] 1.815359
[40] 1.728342
[41] 1.711864
[42] 1.697479
[43] 1.667699
[44] 1.667699
[45] 1.643304
[46] 1.643304
[47] 1.603175
[48] 1.599548
[49] 1.576230
[50] 1.553846
[51] 1.540305
[52] 1.536511
[53] 1.425882
[54] 1.397924
[55] 1.383562

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## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}  => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}   => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}  => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}     => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588

```

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## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218

##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162

##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579

##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667

```

```

## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222

```

```

## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000

```



```

## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667

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## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}         => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}            => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}        => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}               => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}               => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}             => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}             => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}             => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}             => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}             => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}               => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}           => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}                => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                       => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}               => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}                => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}           => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}            => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}           => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}           => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}             => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}             => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}                  => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}            => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}              => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}             => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}              => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}                  => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}              => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}                  => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}             => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}               => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}              => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}                => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}           => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}              => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}              => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}           => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}               => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}           => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}              => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}          => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}           => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}          => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}             => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}          => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}          => {fins=TRUE} 0.1683168 0.2615385

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## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                    => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054

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## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}    => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}     => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}       => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}    => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}   => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}     => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}   => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}     => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}    => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}         => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}   => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}     => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}       => {fins=FALSE} 0.4257426 0.7413793 0.8914204

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## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957

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## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980

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## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556

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## [4] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054

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## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                    => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}         => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}    => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}    => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}     => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}       => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333

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## [33] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                 => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109

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## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}       => {fins=FALSE} 0.7623762 0.9871795 1.1869658

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## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}    => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}   => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}  => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}     => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}     => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}   => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}         => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}         => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.1851852

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## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562

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## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}  => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941

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## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304

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## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs                                rhs            support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs            support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}   => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}       => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}   => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                  => {backbone=FALSE} 0.1782178

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## [15] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}     => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}      => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}         => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}          => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671

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## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift

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## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs                                support
## [1] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}       => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691

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```

## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs                                support
## [1] {tail=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}    => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}     => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence
## [1] {type=fish}                        => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE}                    => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE}                => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}                => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE}      => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE}           => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}                => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE}                => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE}          => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE}             => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE}             => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE}            => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE}              => {hair=FALSE} 0.1980198 1.0000000

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## [14] {milk=FALSE,toothed=TRUE}      => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}          => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE}     => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE}     => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE}      => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE}          => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE}     => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE}      => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE}       => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE}    => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE}                  => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE}      => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE}  => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE}  => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE}    => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catSize=FALSE}  => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE}     => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE}   => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catSize=TRUE}       => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE}      => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE}                => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE}  => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE}               => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE}=> {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catSize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catSize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catSize=FALSE}      => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catSize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE}              => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catSize=FALSE}  => {hair=FALSE} 0.3069307 0.7750000
## [46] {catSize=FALSE}               => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE}               => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE}    => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE}               => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE}    => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE}                  => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE}               => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE}               => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE}                   => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE}               => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793
## [10] 1.7413793
## [11] 1.7413793

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## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}      => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}    => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}     => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}   => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}  => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1

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## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
## lift
## [1] 1.741379
## [2] 1.741379
## lhs rhs support confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE} => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
## lhs rhs support confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE} => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE} => {hair=FALSE} 0.1584158 0.6956522
## lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385

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## [25] {hair=FALSE,predator=TRUE}    => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}        => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}    => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}   => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}   => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994

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## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}   => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}  => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}       => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}      => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}    => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}    => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}       => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}    => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}   => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}     => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}       => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}   => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}        => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}    => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}   => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}     => {legs=TRUE} 0.4158416 0.6885246 0.8915511

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## [19] {eggs=TRUE}      => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}     => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}   => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213

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## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}       => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catSize=FALSE}     => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}      => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}        => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}            => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}       => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}      => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}        => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}     => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}       => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}           => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}      => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}     => {legs=FALSE} 0.1881188 0.3454545

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## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE} => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000

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## [32] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}    => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}      => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}      => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}                => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184

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## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.4285714

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## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
## lhs rhs support confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562

```

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##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}     => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}         => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522

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## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                    => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}          => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}           => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}    => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}       => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                     => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}        => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                 => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}         => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}          => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}         => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}       => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}       => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}         => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}       => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}        => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}       => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}        => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}        => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}    => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}            => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}        => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}        => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}            => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}         => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}       => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}             => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}        => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE}    => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}    => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}        => {legs=FALSE} 0.1485149 0.3571429

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## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878

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## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}   => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385

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## lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
## lhs rhs support confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385

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## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452

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## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE} => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243

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## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768

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## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}      => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}          => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}           => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}         => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}       => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}       => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}          => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}       => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}      => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}        => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}           => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}      => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}            => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}       => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}      => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}         => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}            => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}           => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}        => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}        => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768

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## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000

##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391

##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE}  => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685

##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}       => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}       => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1881188 0.3220339

##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756

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```

## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}  => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}  => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                  => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}        => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}         => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}         => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}            => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}          => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}             => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}        => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}             => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}          => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}            => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}              => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}          => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}        => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}         => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}         => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                       => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}     => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}         => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                   => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028

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## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897

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##	lhs	rhs	support	confidence	lift
## [1]	{type=fish}	=> {backbone=TRUE}	0.1287129	1.0000000	1.2168675
## [2]	{fins=TRUE}	=> {backbone=TRUE}	0.1683168	1.0000000	1.2168675
## [3]	{type=bird}	=> {backbone=TRUE}	0.1980198	1.0000000	1.2168675
## [4]	{feathers=TRUE}	=> {backbone=TRUE}	0.1980198	1.0000000	1.2168675
## [5]	{milk=TRUE}	=> {backbone=TRUE}	0.4059406	1.0000000	1.2168675
## [6]	{type=mammal}	=> {backbone=TRUE}	0.4059406	1.0000000	1.2168675
## [7]	{toothed=TRUE}	=> {backbone=TRUE}	0.6039604	1.0000000	1.2168675
## [8]	{tail=TRUE}	=> {backbone=TRUE}	0.7326733	0.9866667	1.2006426
## [9]	{catsize=TRUE}	=> {backbone=TRUE}	0.4257426	0.9772727	1.1892114
## [10]	{domestic=TRUE}	=> {backbone=TRUE}	0.1188119	0.9230769	1.1232623
## [11]	{breathes=TRUE}	=> {backbone=TRUE}	0.6831683	0.8625000	1.0495482
## [12]	{legs=FALSE}	=> {backbone=TRUE}	0.1881188	0.8260870	1.0052383

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## [13] {legs=TRUE}      => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE} => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE} => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE} => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE} => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}      => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE} => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE} => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs      support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}  => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}   => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}   => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}   => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505

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## [9] 0.2352941 1.320261
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}  => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs      support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs      support
## [1] {toothed=FALSE,tail=FALSE}    => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}  => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}     => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691

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## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {eggs=TRUE} 0.1287129 1.0000000
## [2] {type=bird}                        => {eggs=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                     => {eggs=TRUE} 0.1980198 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {eggs=TRUE} 0.1287129 1.0000000
## [5] {backbone=FALSE,venomous=FALSE}      => {eggs=TRUE} 0.1386139 1.0000000
## [6] {breathes=FALSE,venomous=FALSE}      => {eggs=TRUE} 0.1782178 1.0000000
## [7] {hair=FALSE,airborne=TRUE}           => {eggs=TRUE} 0.1782178 1.0000000
## [8] {milk=FALSE,airborne=TRUE}           => {eggs=TRUE} 0.2178218 1.0000000
## [9] {hair=FALSE,tail=FALSE}              => {eggs=TRUE} 0.1584158 1.0000000
## [10] {milk=FALSE,tail=FALSE}              => {eggs=TRUE} 0.1980198 1.0000000
## [11] {aquatic=TRUE,toothed=FALSE}          => {eggs=TRUE} 0.1287129 1.0000000
## [12] {toothed=FALSE,backbone=TRUE}         => {eggs=TRUE} 0.2178218 1.0000000
## [13] {milk=FALSE,catsize=TRUE}             => {eggs=TRUE} 0.1188119 1.0000000
## [14] {hair=FALSE,predator=FALSE}           => {eggs=TRUE} 0.2178218 1.0000000
## [15] {milk=FALSE,predator=FALSE}           => {eggs=TRUE} 0.2574257 1.0000000
## [16] {milk=FALSE,venomous=FALSE}           => {eggs=TRUE} 0.5148515 1.0000000
## [17] {milk=FALSE,backbone=TRUE}            => {eggs=TRUE} 0.4059406 0.9761905
## [18] {toothed=FALSE}                      => {eggs=TRUE} 0.3861386 0.9750000
## [19] {milk=FALSE,legs=TRUE}                => {eggs=TRUE} 0.3861386 0.9750000
## [20] {milk=FALSE,breathes=TRUE}            => {eggs=TRUE} 0.3762376 0.9743590
## [21] {hair=FALSE,legs=TRUE}                => {eggs=TRUE} 0.3465347 0.9722222
## [22] {hair=FALSE,aquatic=FALSE}            => {eggs=TRUE} 0.2475248 0.9615385
## [23] {hair=FALSE,venomous=FALSE}           => {eggs=TRUE} 0.4950495 0.9615385
## [24] {aquatic=TRUE,catsize=FALSE}           => {eggs=TRUE} 0.2178218 0.9565217
## [25] {hair=FALSE,catsize=FALSE}            => {eggs=TRUE} 0.4158416 0.9545455
## [26] {hair=FALSE,fins=FALSE}               => {eggs=TRUE} 0.4059406 0.9534884
## [27] {breathes=FALSE}                     => {eggs=TRUE} 0.1980198 0.9523810
## [28] {legs=FALSE,catsize=FALSE}            => {eggs=TRUE} 0.1485149 0.9375000
## [29] {hair=FALSE}                          => {eggs=TRUE} 0.5346535 0.9310345
## [30] {airborne=TRUE}                       => {eggs=TRUE} 0.2178218 0.9166667
## [31] {aquatic=TRUE,fins=FALSE}              => {eggs=TRUE} 0.1683168 0.8947368
## [32] {aquatic=TRUE,legs=TRUE}               => {eggs=TRUE} 0.1584158 0.8888889
## [33] {predator=TRUE,catsize=FALSE}          => {eggs=TRUE} 0.2376238 0.8571429
## [34] {aquatic=TRUE,venomous=FALSE}          => {eggs=TRUE} 0.2673267 0.8437500
## [35] {venomous=FALSE,legs=FALSE}            => {eggs=TRUE} 0.1584158 0.8421053
## [36] {aquatic=TRUE}                        => {eggs=TRUE} 0.2970297 0.8333333
## [37] {legs=FALSE}                          => {eggs=TRUE} 0.1881188 0.8260870
## [38] {tail=FALSE,domestic=FALSE}            => {eggs=TRUE} 0.1881188 0.8260870
## [39] {domestic=FALSE,catsize=FALSE}          => {eggs=TRUE} 0.4059406 0.8200000
## [40] {venomous=FALSE,catsize=FALSE}          => {eggs=TRUE} 0.4059406 0.8200000
## [41] {tail=FALSE}                          => {eggs=TRUE} 0.1980198 0.7692308
## [42] {fins=TRUE}                           => {eggs=TRUE} 0.1287129 0.7647059
## [43] {predator=FALSE,domestic=FALSE}        => {eggs=TRUE} 0.2079208 0.6176471
## [44] {predator=TRUE}                       => {eggs=TRUE} 0.3267327 0.5892857
## [45] {catsize=TRUE}                        => {eggs=TRUE} 0.1287129 0.2954545
##      lift
## [1] 1.7118644
## [2] 1.7118644
## [3] 1.7118644
## [4] 1.7118644
## [5] 1.7118644

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## [6] 1.7118644
## [7] 1.7118644
## [8] 1.7118644
## [9] 1.7118644
## [10] 1.7118644
## [11] 1.7118644
## [12] 1.7118644
## [13] 1.7118644
## [14] 1.7118644
## [15] 1.7118644
## [16] 1.7118644
## [17] 1.6711057
## [18] 1.6690678
## [19] 1.6690678
## [20] 1.6679704
## [21] 1.6643126
## [22] 1.6460235
## [23] 1.6460235
## [24] 1.6374355
## [25] 1.6340524
## [26] 1.6322428
## [27] 1.6303471
## [28] 1.6048729
## [29] 1.5938048
## [30] 1.5692090
## [31] 1.5316682
## [32] 1.5216573
## [33] 1.4673123
## [34] 1.4443856
## [35] 1.4415700
## [36] 1.4265537
## [37] 1.4141489
## [38] 1.4141489
## [39] 1.4037288
## [40] 1.4037288
## [41] 1.3168188
## [42] 1.3090728
## [43] 1.0573280
## [44] 1.0087772
## [45] 0.5057781
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}      => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [2] {type=mammal}    => {eggs=FALSE} 0.3960396 0.9756098 2.346109
## [3] {backbone=TRUE} => {eggs=FALSE} 0.4059406 0.4939759 1.187894
##      lhs                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {eggs=TRUE} 0.2178218 1.0000000
## [2] {milk=FALSE,backbone=TRUE}    => {eggs=TRUE} 0.4059406 0.9761905
##      lift
## [1] 1.711864
## [2] 1.671106
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence
## [1] {type=fish}          => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714

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## [3] {breathes=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}  => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}     => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}     => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                    => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692

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## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699

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## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}  => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}    => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}       => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}     => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}     => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.5000000

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## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807

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## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342

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## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
##      lift

```

```

## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000

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## [4] {aquatic=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109

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## [39] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}         => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}        => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                   => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}     => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}               => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}               => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061

```

[12] 0.5714286 2.8857143
[13] 0.5555556 2.8055556
[14] 0.5555556 2.8055556
[15] 0.5555556 2.8055556
[16] 0.5405405 2.7297297
[17] 0.5384615 2.7192308
[18] 0.5238095 2.6452381
[19] 0.5185185 2.6185185
[20] 0.5128205 2.5897436
[21] 0.5128205 2.5897436
[22] 0.5128205 2.5897436
[23] 0.5128205 2.5897436
[24] 0.5128205 2.5897436
[25] 0.5000000 2.5250000
[26] 0.5000000 2.5250000
[27] 0.5000000 2.5250000
[28] 0.5000000 2.5250000
[29] 0.4827586 2.4379310
[30] 0.4761905 2.4047619
[31] 0.4761905 2.4047619
[32] 0.4761905 2.4047619
[33] 0.4666667 2.3566667
[34] 0.4651163 2.3488372
[35] 0.4545455 2.2954545
[36] 0.4347826 2.1956522
[37] 0.4255319 2.1489362
[38] 0.4230769 2.1365385
[39] 0.4230769 2.1365385
[40] 0.3846154 1.9423077
[41] 0.3846154 1.9423077
[42] 0.3783784 1.9108108
[43] 0.3773585 1.9056604
[44] 0.3703704 1.8703704
[45] 0.3571429 1.8035714
[46] 0.3508772 1.7719298
[47] 0.3500000 1.7675000
[48] 0.3448276 1.7413793
[49] 0.3448276 1.7413793
[50] 0.3414634 1.7243902
[51] 0.3414634 1.7243902
[52] 0.3389831 1.7118644
[53] 0.3333333 1.6833333
[54] 0.3278689 1.6557377
[55] 0.3125000 1.5781250
[56] 0.3055556 1.5430556
[57] 0.3030303 1.5303030
[58] 0.2916667 1.4729167
[59] 0.2898551 1.4637681
[60] 0.2857143 1.4428571
[61] 0.2820513 1.4243590
[62] 0.2816901 1.4225352
[63] 0.2800000 1.4140000
[64] 0.2739726 1.3835616
[65] 0.2702703 1.3648649

```

## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                      rhs      support

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```

## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs            support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs            support
## [1] {toothed=FALSE,breathes=TRUE}          => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}               => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}                => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}           => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}          => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}             => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738

```

```

## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs          support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs          support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538

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## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}    => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370

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## [12] 1.803571
##      lhs                                rhs                                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                        => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}             => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}             => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}         => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}     => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}           => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}           => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}        => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}        => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}        => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168

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## [28] {eggs=TRUE,predator=TRUE}      => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}  => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}        => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}     => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                   => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051

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## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778

##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}   => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}     => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE} => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}    => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}     => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE} => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE} => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE} => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}    => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}   => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE} => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}     => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}    => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278

##      lhs      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

##      lhs      rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208

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## [3] {eggs=TRUE,airborne=FALSE}      => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}             => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}              => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}              => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}           => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}                => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}                 => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}              => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}             => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}             => {breathes=FALSE} 0.1980198 0.5128205

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## [7] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}    => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}=> {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE} => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE} => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267

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## [20] {eggs=TRUE,airborne=FALSE}      => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}   => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}   => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}  => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}     => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                  => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}  => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}      => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}     => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}      => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}  => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}          => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}      => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}       => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}           => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                 => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                    => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}     => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                     => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                     => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                 => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087

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## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE} => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE} => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE} => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}     => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}   => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}   => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}     => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}         => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890

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## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs      support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}                => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}                 => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}                => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}          => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}             => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}         => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                            => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}              => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                      => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}              => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}               => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}             => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}               => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}           => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}           => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}             => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}             => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}               => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}             => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}              => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}             => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}              => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catSize=FALSE}            => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}              => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catSize=FALSE}          => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}                  => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}              => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}              => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}            => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}                  => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}               => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}             => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}                  => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}              => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catSize=FALSE}           => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}          => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}               => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE}           => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}           => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}             => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}               => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}             => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}              => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catSize=FALSE}               => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}         => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}           => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}              => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}         => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}         => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}                        => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE}          => {legs=FALSE} 0.1881188 0.3015873

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## [53] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}      => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
##      lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562

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## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}      => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}          => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}           => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}         => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}       => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}        => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}          => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}       => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}      => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}        => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}           => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}      => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}           => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}        => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}      => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}         => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}            => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}           => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}        => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444

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## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence

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## [1] {eggs=TRUE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}   => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149

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## [6] {milk=FALSE,legs=FALSE}      => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}       => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}      => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}    => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}     => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}     => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}  => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}      => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}      => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}     => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}     => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}   => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}    => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}   => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}    => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}     => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}       => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}        => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                  => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492

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## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}        => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}        => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}    => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}       => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}        => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}    => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}   => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}     => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}    => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}        => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}   => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}       => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}   => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}    => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}    => {breathes=TRUE} 0.3861386 0.6964286 0.8792411

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## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs      support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs      support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}       => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs      support
## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}      => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                     rhs      support

```

```

## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}       => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}              => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}            => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}            => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}           => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}           => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}              => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}         => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}              => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}            => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}            => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}          => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}          => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}              => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}         => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571

```

```

## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}              => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}                => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}        => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}           => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}       => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                          => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}            => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                    => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}             => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}             => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}          => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}             => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}        => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}        => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}          => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}          => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}            => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}          => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}           => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}          => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}           => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catSize=FALSE}         => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}           => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catSize=FALSE}       => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}               => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}           => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}           => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}         => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}               => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}            => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}         => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}               => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}           => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catSize=FALSE}       => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}       => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}           => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE}       => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}        => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}          => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}            => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}          => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}           => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catSize=FALSE}            => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}      => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}        => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}           => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}      => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}      => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}                     => {legs=FALSE} 0.1683168 0.3035714

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## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}      => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728

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## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}     => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}          => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}           => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}         => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}      => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}       => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}          => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}      => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}     => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}       => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}          => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}     => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}           => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}      => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}     => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}        => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}           => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}          => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}       => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385

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## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149

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##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}  => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}     => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}  => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                 => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}   => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}   => {tail=FALSE} 0.1089109 0.6111111

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## [5] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}         => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}        => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}       => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}    => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}        => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}    => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}   => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}     => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                  => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}     => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}    => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}              => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}               => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}              => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383

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## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413

##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}       => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}    => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}       => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}       => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}     => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}      => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}      => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}  => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}  => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}    => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}  => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}  => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}      => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}  => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}        => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}    => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}  => {tail=TRUE} 0.2277228 0.5750000 0.7743333

##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412

##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041

##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513

##      lift
## [1] 1.174419
## [2] 1.095661

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##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}     => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}    => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}    => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}   => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846

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## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {tail=TRUE} 0.1287129 1.0000000
## [2] {type=bird}                         => {tail=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                     => {tail=TRUE} 0.1980198 1.0000000
## [4] {backbone=TRUE,breathes=FALSE}     => {tail=TRUE} 0.1386139 1.0000000
## [5] {airborne=TRUE,backbone=TRUE}       => {tail=TRUE} 0.1782178 1.0000000
## [6] {toothed=FALSE,backbone=TRUE}      => {tail=TRUE} 0.2178218 1.0000000
## [7] {backbone=TRUE,legs=FALSE}         => {tail=TRUE} 0.1782178 0.9473684
## [8] {fins=TRUE}                        => {tail=TRUE} 0.1584158 0.9411765
## [9] {predator=FALSE,catsize=TRUE}       => {tail=TRUE} 0.1485149 0.9375000
## [10] {hair=FALSE,backbone=TRUE}          => {tail=TRUE} 0.4059406 0.9318182
## [11] {hair=FALSE,catsize=TRUE}           => {tail=TRUE} 0.1287129 0.9285714
## [12] {eggs=TRUE,backbone=TRUE}           => {tail=TRUE} 0.3861386 0.9285714
## [13] {milk=FALSE,backbone=TRUE}           => {tail=TRUE} 0.3861386 0.9285714
## [14] {eggs=TRUE,catsize=TRUE}             => {tail=TRUE} 0.1188119 0.9230769
## [15] {milk=FALSE,catsize=TRUE}            => {tail=TRUE} 0.1089109 0.9166667
## [16] {predator=FALSE,backbone=TRUE}      => {tail=TRUE} 0.3267327 0.9166667
## [17] {aquatic=FALSE,backbone=TRUE}       => {tail=TRUE} 0.4752475 0.9056604
## [18] {backbone=TRUE,domestic=FALSE}      => {tail=TRUE} 0.6336634 0.9014085
## [19] {backbone=TRUE,catsize=FALSE}       => {tail=TRUE} 0.3564356 0.9000000
## [20] {eggs=FALSE,domestic=FALSE}         => {tail=TRUE} 0.2970297 0.8823529
## [21] {milk=TRUE,domestic=FALSE}           => {tail=TRUE} 0.2871287 0.8787879
## [22] {domestic=FALSE,type=mammal}         => {tail=TRUE} 0.2871287 0.8787879
## [23] {predator=FALSE,toothed=TRUE}       => {tail=TRUE} 0.2079208 0.8750000
## [24] {hair=FALSE,toothed=TRUE}           => {tail=TRUE} 0.1980198 0.8695652
## [25] {domestic=FALSE,catsize=TRUE}       => {tail=TRUE} 0.3267327 0.8684211
## [26] {aquatic=FALSE,toothed=TRUE}        => {tail=TRUE} 0.3267327 0.8684211
## [27] {toothed=TRUE,domestic=FALSE}       => {tail=TRUE} 0.4455446 0.8653846
## [28] {catsize=TRUE}                      => {tail=TRUE} 0.3762376 0.8636364
## [29] {toothed=TRUE,venomous=FALSE}       => {tail=TRUE} 0.4851485 0.8596491
## [30] {eggs=FALSE}                       => {tail=TRUE} 0.3564356 0.8571429

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## [31] {milk=FALSE,toothed=TRUE}      => {tail=TRUE} 0.1782178 0.8571429
## [32] {milk=TRUE}                    => {tail=TRUE} 0.3465347 0.8536585
## [33] {type=mammal}                  => {tail=TRUE} 0.3465347 0.8536585
## [34] {predator=TRUE,breathes=TRUE}  => {tail=TRUE} 0.3168317 0.8205128
## [35] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [36] {aquatic=FALSE,predator=TRUE}  => {tail=TRUE} 0.2178218 0.8148148
## [37] {hair=TRUE,predator=TRUE}      => {tail=TRUE} 0.1584158 0.8000000
## [38] {hair=TRUE,domestic=FALSE}     => {tail=TRUE} 0.2673267 0.7941176
## [39] {venomous=FALSE,legs=FALSE}    => {tail=TRUE} 0.1485149 0.7894737
## [40] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
## [41] {legs=FALSE}                   => {tail=TRUE} 0.1782178 0.7826087
## [42] {airborne=FALSE,aquatic=FALSE} => {tail=TRUE} 0.3564356 0.7826087
## [43] {airborne=FALSE,breathes=TRUE} => {tail=TRUE} 0.4257426 0.7678571
## [44] {hair=TRUE}                    => {tail=TRUE} 0.3267327 0.7674419
## [45] {breathes=TRUE,domestic=FALSE} => {tail=TRUE} 0.5148515 0.7647059
## [46] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
## [47] {aquatic=FALSE}                => {tail=TRUE} 0.4851485 0.7538462
## [48] {airborne=TRUE}                => {tail=TRUE} 0.1782178 0.7500000
## [49] {predator=TRUE}                => {tail=TRUE} 0.4158416 0.7500000
## [50] {airborne=FALSE,predator=FALSE} => {tail=TRUE} 0.2079208 0.7500000
## [51] {domestic=FALSE}               => {tail=TRUE} 0.6435644 0.7386364
## [52] {predator=FALSE}               => {tail=TRUE} 0.3267327 0.7333333
## [53] {hair=FALSE}                   => {tail=TRUE} 0.4158416 0.7241379
## [54] {feathers=FALSE}               => {tail=TRUE} 0.5445545 0.6790123
## [55] {eggs=TRUE}                    => {tail=TRUE} 0.3861386 0.6610169
## [56] {catsize=FALSE}                => {tail=TRUE} 0.3663366 0.6491228
## [57] {toothed=FALSE}                => {tail=TRUE} 0.2277228 0.5750000
## lift
## [1] 1.3466667
## [2] 1.3466667
## [3] 1.3466667
## [4] 1.3466667
## [5] 1.3466667
## [6] 1.3466667
## [7] 1.2757895
## [8] 1.2674510
## [9] 1.2625000
## [10] 1.2548485
## [11] 1.2504762
## [12] 1.2504762
## [13] 1.2504762
## [14] 1.2430769
## [15] 1.2344444
## [16] 1.2344444
## [17] 1.2196226
## [18] 1.2138967
## [19] 1.2120000
## [20] 1.1882353
## [21] 1.1834343
## [22] 1.1834343
## [23] 1.1783333
## [24] 1.1710145
## [25] 1.1694737
## [26] 1.1694737

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## [27] 1.1653846
## [28] 1.1630303
## [29] 1.1576608
## [30] 1.1542857
## [31] 1.1542857
## [32] 1.1495935
## [33] 1.1495935
## [34] 1.1049573
## [35] 1.1018182
## [36] 1.0972840
## [37] 1.0773333
## [38] 1.0694118
## [39] 1.0631579
## [40] 1.0593778
## [41] 1.0539130
## [42] 1.0539130
## [43] 1.0340476
## [44] 1.0334884
## [45] 1.0298039
## [46] 1.0163522
## [47] 1.0151795
## [48] 1.0100000
## [49] 1.0100000
## [50] 1.0100000
## [51] 0.9946970
## [52] 0.9875556
## [53] 0.9751724
## [54] 0.9144033
## [55] 0.8901695
## [56] 0.8741520
## [57] 0.7743333
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444 3.6688034
## [2] {fins=FALSE}      => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [3] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [4] {predator=TRUE}  => {tail=FALSE} 0.1386139 0.2500000 0.9711538
## [5] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591 0.9189413
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [2] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [3] {milk=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2871287 0.8787879
## [4] {domestic=FALSE,type=mammal}    => {tail=TRUE} 0.2871287 0.8787879
## [5] {domestic=FALSE,catsize=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [6] {toothed=TRUE,domestic=FALSE}   => {tail=TRUE} 0.4455446 0.8653846
## [7] {hair=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2673267 0.7941176
## [8] {breathes=TRUE,domestic=FALSE}  => {tail=TRUE} 0.5148515 0.7647059
## [9] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
##      lift
## [1] 1.213897
## [2] 1.188235
## [3] 1.183434
## [4] 1.183434
## [5] 1.169474
## [6] 1.165385

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## [7] 1.069412
## [8] 1.029804
## [9] 1.016352
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [2] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [3] {hair=TRUE,predator=TRUE}      => {tail=TRUE} 0.1584158 0.8000000
##      lift
## [1] 1.104957
## [2] 1.097284
## [3] 1.077333
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [2] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [3] {venomous=FALSE,legs=FALSE}    => {tail=TRUE} 0.1485149 0.7894737
## [4] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
##      lift
## [1] 1.157661
## [2] 1.101818
## [3] 1.063158
## [4] 1.059378
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}           => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}            => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}         => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}         => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}     => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}       => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}             => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}         => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}         => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}         => {tail=FALSE} 0.1287129 0.3023256

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## [32] {fins=FALSE} => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE} => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE} => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
## lhs rhs support confidence lift
## [1] {type=fish} => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird} => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE} => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE} => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE} => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE} => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE} => {tail=TRUE} 0.3465347 0.8536585 1.1495935

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## [8] {type=mammal}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}       => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}        => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}   => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}  => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}    => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}  => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}  => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}      => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}  => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}       => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}   => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}   => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                                     rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                     rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                     rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                     rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                     rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}  => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}      => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                     rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {tail=FALSE} 0.1980198 0.5128205

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## [3] {feathers=FALSE,milk=FALSE}      => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}      => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}       => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}   => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}   => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs            support
## [1] {type=fish}                      => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}             => {breathes=FALSE} 0.1287129

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## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580

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## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}       => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}   => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}  => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}  => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818

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## [18] {catsize=FALSE} => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs               support
## [1] {hair=FALSE,domestic=FALSE}             => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}             => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}              => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}          => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}          => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}            => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs               support
## [1] {airborne=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}              => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}              => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}              => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}           => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}          => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}          => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs               support
## [1] {legs=FALSE,catsize=FALSE}              => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}              => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}            => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}               => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918

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## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}           => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}               => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}               => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}             => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}             => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}            => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}            => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}               => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}           => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}              => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}            => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}            => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}           => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}           => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}              => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000

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## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}   => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}   => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}        => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}          => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}            => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}         => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}         => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}             => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}        => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}        => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}         => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                      => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}          => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}         => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}         => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                  => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                   => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                  => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275

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## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}       => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}    => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}      => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}       => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}     => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}      => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}       => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}  => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}   => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}    => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}  => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}  => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}      => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}  => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}       => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}   => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}  => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift

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## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs            support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}       => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}   => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}        => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs            support  confidence

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## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}      => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}       => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}        => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}       => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}           => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}       => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}        => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}       => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}         => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}        => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}       => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}          => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}       => {tail=FALSE} 0.1089109 0.3666667

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## [22] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}           => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}  => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}      => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}      => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}       => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                    => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}        => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}       => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}       => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                 => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972

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## [37] 0.9711538
## [38] 0.9189413
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}                 => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}             => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}                 => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}              => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}                => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}                => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}               => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}                => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}                => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}            => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}            => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}              => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}            => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}            => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}                => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}            => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}                 => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}             => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}            => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                      rhs          support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}   => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                      rhs          support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                      rhs          support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930

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## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}      => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}      => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence

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```

## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE} => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE} => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE} => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE} => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE} => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE} => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE} => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE} => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE} => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE} => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228

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## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                    => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {toothed=TRUE} 0.1287129 1.0000000 1.6557377

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## [2] {fins=TRUE}      => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}     => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}    => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}   => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}     => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE} => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}    => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}     => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs          support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}  => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                      rhs          support
## [1] {eggs=TRUE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}  => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}   => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168

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## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE} => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453

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## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE} => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE} => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE} => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE} => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [17] {type=bird} => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE} => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE} => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE} => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE} => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE} => {predator=FALSE} 0.2871287
## [29] {milk=TRUE} => {predator=FALSE} 0.1881188
## [30] {type=mammal} => {predator=FALSE} 0.1881188
## [31] {tail=FALSE} => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE} => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE} => {predator=FALSE} 0.2574257
## [34] {milk=FALSE} => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE} => {predator=FALSE} 0.3366337
## [36] {hair=FALSE} => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE} => {predator=FALSE} 0.1584158
## confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239

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## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}       => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}    => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}   => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}       => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}        => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}        => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}   => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs      support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538

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## lift
## [1] 1.899145
## lhs rhs support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE} => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {catsize=FALSE,type=bird} => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178

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## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}               => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}              => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973

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## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}       => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}  => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}       => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}  => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}   => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727

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## [2] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
## lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}     => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731

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##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885

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## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                     rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                     rhs      support  confidence
## [1] {type=fish}                          => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}          => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}             => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}         => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}              => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}              => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}             => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}            => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}            => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}            => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}             => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}              => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}          => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}               => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                      => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}              => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}          => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}           => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}          => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}          => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}            => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}            => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}             => {fins=TRUE} 0.1287129 0.3513514

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## [29] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765

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## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810

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## [3] {feathers=TRUE} => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE} => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE} => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE} => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE} => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
## lhs rhs support confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}=> {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}         => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}=> {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE}=> {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882

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## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}  => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356

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## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs      rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}       => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305

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##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}         => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}         => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}            => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}       => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737

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## [11] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}               => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                   => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818

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## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305

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## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}       => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}  => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}  => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}     => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}  => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}  => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}     => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}     => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}  => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}    => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}   => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}  => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

```

```

## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218

## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218

## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162

## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846

```



```

## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}     => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333

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## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882

```

```

##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}  => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304

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```

## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}        => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}          => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}      => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                  => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                    => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}        => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                      => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}          => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}       => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}       => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}       => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}        => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}     => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}     => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}    => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}       => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                    => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}        => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}       => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}        => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}    => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}            => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}        => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}         => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}        => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}             => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                   => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                     => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}       => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                       => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                       => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                   => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352

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```

## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758

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```

##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}       => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439

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## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}    => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}  => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                                rhs            support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                                rhs            support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                                rhs            support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}  => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}   => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}       => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,toothed=TRUE}   => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}       => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}  => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs            support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}  => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}       => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}   => {predator=TRUE} 0.2079208
##      confidence lift

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## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal} => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE} => {catsize=TRUE} 0.3168317
## [9] {type=mammal} => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE} => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE} => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE} => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE} => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE} => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396

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## [26] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}        => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}    => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}    => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}        => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}           => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}        => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}        => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}   => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}       => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}           => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}   => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}   => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                 => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                  => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                    => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                    => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209

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## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909
##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}   => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}      => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}       => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}      => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509

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## [8] {feathers=TRUE} => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE} => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE} => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE} => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE} => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE} => {catsize=FALSE} 0.1089109 0.2619048 0.4640769
##
## lhs rhs support confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE} => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE} => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##
## lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##
## lhs rhs support confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327 0.5500000
##
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
##
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108

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## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {catsize=FALSE,type=bird} => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168

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## [34] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}   => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}    => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}   => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}             => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}            => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667

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## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}       => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}      => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}  => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}  => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}   => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence

```

```

## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
## lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175

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## [7] 1.456731
##      lhs                                rhs                support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs                support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs                support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885

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## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                     rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                     rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1287129
## [3] {type=bird}                     => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                 => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                 => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}           => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129

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## [28] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}  => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}   => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}   => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}  => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}            => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}           => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241

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## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}       => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}      => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126

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## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}         => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift

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## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs            support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168

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## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}     => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}     => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}     => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}             => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}  => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168

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## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}          => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873

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## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}     => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}    => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}    => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}       => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}    => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}   => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}   => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}    => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}         => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}    => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}   => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}    => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109

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## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
## lhs rhs support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}   => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}   => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}  => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168

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## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}        => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}           => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support    confidence
## [1] {type=fish}                          => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}                 => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}                   => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}                   => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}           => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}              => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}         => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                             => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}               => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                       => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}              => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}                => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}              => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}                => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}            => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}            => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}              => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}              => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}                => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}             => {legs=FALSE} 0.1980198 0.5263158

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## [21] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}      => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}       => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}       => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}   => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}           => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}       => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}       => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}           => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}        => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}     => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}            => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}       => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE}   => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE}   => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}        => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE}   => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}      => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}        => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}       => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}        => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}  => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}  => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}  => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}                  => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE}   => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}       => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334

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## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}   => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}  => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}    => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225

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## [15] {tail=TRUE}      => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE} => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}   => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}      => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}     => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}   => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685

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##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}     => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}           => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}      => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}       => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}     => {legs=FALSE} 0.1980198 0.5000000

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## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs                                rhs            support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}          => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs            support  confidence
## [1] {milk=TRUE,predator=FALSE}          => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}            => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE}                 => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE}                => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal}           => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal}            => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal}                => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal}               => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE}            => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE}                 => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE}             => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE}                           => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal}                         => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE}            => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE}                => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE}             => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE}           => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE}                          => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE}                => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE}            => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE}             => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE}               => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE}            => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE}           => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catsize=TRUE}           => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE}                => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE}               => {hair=TRUE} 0.2772277 0.7777778

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## [28] {breathes=TRUE, catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE, aquatic=FALSE}  => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE, catsize=TRUE}   => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE, legs=TRUE}      => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE, aquatic=FALSE}  => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE, breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE, predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE, venomous=FALSE}   => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE, legs=TRUE}      => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE, breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE, backbone=TRUE}   => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE, legs=TRUE}       => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE, fins=FALSE}     => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE}                  => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE, backbone=TRUE}  => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE, tail=TRUE}       => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE, breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE, predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE, venomous=FALSE}  => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE, tail=TRUE}      => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE, legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE, legs=TRUE}      => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE, fins=FALSE}     => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE, tail=TRUE}           => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE, legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE, backbone=TRUE}  => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE, breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE, venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE, breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE, fins=FALSE}     => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE, fins=FALSE}      => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE, venomous=FALSE}  => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE, tail=TRUE}      => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE, tail=TRUE}          => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE, tail=TRUE}       => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE, legs=TRUE}      => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE, fins=FALSE}      => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE, backbone=TRUE}  => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE, venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE, tail=TRUE}      => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}                => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE, fins=FALSE}     => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE, venomous=FALSE}  => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                 => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE, tail=TRUE}      => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}                => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372

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[8] 2.3488372
[9] 2.3488372
[10] 2.2870257
[11] 2.2835917
[12] 2.2342598
[13] 2.2342598
[14] 2.2313953
[15] 2.2252142
[16] 2.1769711
[17] 2.1634027
[18] 2.1251384
[19] 2.0692137
[20] 1.9699925
[21] 1.9461794
[22] 1.9217759
[23] 1.8990599
[24] 1.8594961
[25] 1.8543452
[26] 1.8409805
[27] 1.8268734
[28] 1.8067979
[29] 1.7961696
[30] 1.7616279
[31] 1.7008821
[32] 1.6850354
[33] 1.6833333
[34] 1.5889193
[35] 1.5658915
[36] 1.5658915
[37] 1.5519103
[38] 1.5511189
[39] 1.5267442
[40] 1.5047238
[41] 1.4632101
[42] 1.4540421
[43] 1.4380636
[44] 1.4313227
[45] 1.4260797
[46] 1.4247045
[47] 1.4093023
[48] 1.3946221
[49] 1.3852117
[50] 1.3701550
[51] 1.3598531
[52] 1.3513858
[53] 1.3370304
[54] 1.3276036
[55] 1.3192099
[56] 1.3176404
[57] 1.3176404
[58] 1.3167724
[59] 1.2840310
[60] 1.2774378
[61] 1.2739456


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## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}    => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}  => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE} => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE} => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE} => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE} => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}   => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}     => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517

##      lhs      rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709

##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553

##      lhs      rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174

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## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs rhs support confidence
## [1] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs rhs support confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774

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## [9] {aquatic=FALSE,legs=TRUE}      => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}       => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198

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## [36] {hair=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                     => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658

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## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE} => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE} => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}  => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}  => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278

##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

##      lhs                      rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}     => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919

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## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}         => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}           => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}         => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}         => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}        => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}         => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032

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## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}     => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs      rhs      support  confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}    => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}      => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}     => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}       => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}      => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}  => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}   => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}   => {domestic=FALSE} 0.3762376 0.8636364 0.9912190

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## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}      => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}  => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}     => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}      => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}   => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {type=fish}                      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}             => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}        => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}        => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}        => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}          => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}          => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                  => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}            => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}       => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}       => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}         => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}         => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}              => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}          => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}         => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}         => {fins=TRUE} 0.1485149 0.3409091

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## [31] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}               => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871

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## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810

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## [5] {toothed=FALSE} => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE} => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE} => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
## lhs rhs support confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222

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## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs      rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304

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## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}     => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061

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## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714

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## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
## lhs rhs support confidence lift

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## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}   => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}      => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}       => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}     => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}      => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}     => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}  => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}   => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}     => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}    => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}  => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                    => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}          => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}          => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}         => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}          => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}         => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}              => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}             => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}            => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}            => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}            => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}             => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}            => {toothed=FALSE} 0.3861386

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## [16] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}        => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}        => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}     => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}     => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}      => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}        => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}     => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}       => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                  => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}               => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}    => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}               => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625

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## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}     => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}   => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}        => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}   => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}    => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}     => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE}   => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}    => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}   => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}    => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}       => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}        => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs      support

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## [1] {tail=FALSE,domestic=FALSE}      => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}        => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}        => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE}     => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.2871287
## confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
## lhs rhs support confidence
## [1] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
## lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
## lhs rhs support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}     => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}      => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}       => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}        => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729

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## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}     => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}     => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}  => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,airborne=TRUE}  => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {type=fish}                  => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE}              => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE}         => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}        => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE} => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE}    => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}        => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE}       => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE}  => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE}     => {hair=FALSE} 0.2970297 1.0000000
## [11] {milk=FALSE,catsize=TRUE}     => {hair=FALSE} 0.1188119 1.0000000

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## [12] {milk=FALSE,predator=TRUE}      => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE}         => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE}         => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}           => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE}       => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE}        => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE}         => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE}            => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE}        => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE}         => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE}          => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE}       => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE}                     => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE}         => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE}     => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE}     => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE}       => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE}    => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE}     => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE}        => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE}      => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE}          => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE}         => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE}                   => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE}     => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE}    => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE}                   => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE}   => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE}    => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE}    => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE}         => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catsize=FALSE}    => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE}                  => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE}     => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE}                   => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE}                   => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE}       => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE}                   => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE}       => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE}                      => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE}                   => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE}                   => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE}                       => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE}                   => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793
## [9] 1.7413793

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## [10] 1.7413793
## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}   => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}    => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}  => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE}=> {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE} => {hair=TRUE} 0.3861386 0.4698795 1.1036705
## [7] {domestic=FALSE}=> {hair=TRUE} 0.3366337 0.3863636 0.9075053

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##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
##      lift
## [1] 1.741379
## [2] 1.741379
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE}  => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
##      lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE}  => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE}  => {hair=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}    => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                      rhs      support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}    => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}       => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}   => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}   => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}         => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}       => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}         => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}        => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}        => {domestic=FALSE} 0.5346535 0.9152542 1.0504622

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## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}      => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}     => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                 => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}          => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}     => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000

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## [26] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}   => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}    => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}     => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                 => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772

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[13] 3.960784
[14] 3.874680
[15] 3.861765
[16] 3.861765
[17] 3.677871
[18] 3.677871
[19] 3.656109
[20] 3.366667
[21] 3.366667
[22] 3.258065
[23] 2.970588
[24] 2.345201
[25] 2.227941
[26] 2.121849
[27] 2.087440
[28] 2.087440
[29] 2.032508
[30] 2.025401
[31] 1.980392
[32] 1.980392
[33] 1.930882
[34] 1.930882
[35] 1.838936
[36] 1.838936
[37] 1.828054
[38] 1.828054
[39] 1.815359
[40] 1.728342
[41] 1.711864
[42] 1.697479
[43] 1.667699
[44] 1.667699
[45] 1.643304
[46] 1.643304
[47] 1.603175
[48] 1.599548
[49] 1.576230
[50] 1.553846
[51] 1.540305
[52] 1.536511
[53] 1.425882
[54] 1.397924
[55] 1.383562
[56] 1.371041
[57] 1.371041
[58] 1.345172
[59] 1.338857
[60] 1.338857
[61] 1.338857
[62] 1.320261
[63] 1.302176
[64] 1.296257
[65] 1.284579
[66] 1.100218

##	lhs	rhs	support	confidence	lift
## [1]	{backbone=FALSE}	=> {fins=FALSE}	0.1782178	1.0000000	1.2023810
## [2]	{type=bird}	=> {fins=FALSE}	0.1980198	1.0000000	1.2023810
## [3]	{feathers=TRUE}	=> {fins=FALSE}	0.1980198	1.0000000	1.2023810
## [4]	{airborne=TRUE}	=> {fins=FALSE}	0.2376238	1.0000000	1.2023810
## [5]	{toothed=FALSE}	=> {fins=FALSE}	0.3960396	1.0000000	1.2023810
## [6]	{legs=TRUE}	=> {fins=FALSE}	0.7623762	0.9871795	1.1869658
## [7]	{hair=TRUE}	=> {fins=FALSE}	0.4059406	0.9534884	1.1464563
## [8]	{breathes=TRUE}	=> {fins=FALSE}	0.7524752	0.9500000	1.1422619
## [9]	{domestic=TRUE}	=> {fins=FALSE}	0.1188119	0.9230769	1.1098901
## [10]	{predator=FALSE}	=> {fins=FALSE}	0.4059406	0.9111111	1.0955026
## [11]	{eggs=FALSE}	=> {fins=FALSE}	0.3762376	0.9047619	1.0878685
## [12]	{milk=TRUE}	=> {fins=FALSE}	0.3663366	0.9024390	1.0850755
## [13]	{type=mammal}	=> {fins=FALSE}	0.3663366	0.9024390	1.0850755
## [14]	{catsize=FALSE}	=> {fins=FALSE}	0.4752475	0.8421053	1.0125313
## [15]	{venomous=FALSE}	=> {fins=FALSE}	0.7623762	0.8279570	0.9955197
## [16]	{catsize=TRUE}	=> {fins=FALSE}	0.3564356	0.8181818	0.9837662
## [17]	{domestic=FALSE}	=> {fins=FALSE}	0.7128713	0.8181818	0.9837662
## [18]	{backbone=TRUE}	=> {fins=FALSE}	0.6534653	0.7951807	0.9561102
## [19]	{feathers=FALSE}	=> {fins=FALSE}	0.6336634	0.7901235	0.9500294
## [20]	{tail=TRUE}	=> {fins=FALSE}	0.5841584	0.7866667	0.9458730
## [21]	{eggs=TRUE}	=> {fins=FALSE}	0.4554455	0.7796610	0.9374496
## [22]	{airborne=FALSE}	=> {fins=FALSE}	0.5940594	0.7792208	0.9369202
## [23]	{predator=TRUE}	=> {fins=FALSE}	0.4257426	0.7678571	0.9232568
## [24]	{hair=FALSE}	=> {fins=FALSE}	0.4257426	0.7413793	0.8914204
## [25]	{toothed=TRUE}	=> {fins=FALSE}	0.4356436	0.7213115	0.8672912
## [26]	{aquatic=TRUE}	=> {fins=FALSE}	0.1881188	0.5277778	0.6345899
##	lhs	rhs	support	confidence	
## [1]	{venomous=FALSE,legs=FALSE}	=> {fins=TRUE}	0.1485149	0.7894737	
## [2]	{breathes=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.6666667	
## [3]	{aquatic=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.5000000	
## [4]	{toothed=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.2807018	
## [5]	{hair=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1386139	0.2692308	
## [6]	{predator=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.2400000	
## [7]	{milk=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.2307692	
## [8]	{eggs=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.2264151	
## [9]	{airborne=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.2253521	
## [10]	{feathers=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.2191781	
## [11]	{venomous=FALSE,domestic=FALSE}	=> {fins=TRUE}	0.1485149	0.1851852	
##	lift				
## [1]	4.690402				
## [2]	3.960784				
## [3]	2.970588				
## [4]	1.667699				
## [5]	1.599548				
## [6]	1.425882				
## [7]	1.371041				
## [8]	1.345172				
## [9]	1.338857				
## [10]	1.302176				
## [11]	1.100218				
##	lhs	rhs	support	confidence	
## [1]	{toothed=TRUE,domestic=FALSE}	=> {fins=TRUE}	0.1584158	0.3076923	
## [2]	{hair=FALSE,domestic=FALSE}	=> {fins=TRUE}	0.1386139	0.2592593	

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## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}       => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}        => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}          => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}         => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667

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## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}   => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}   => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000

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## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs      rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}       => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401

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## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE}          => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE}         => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE}                => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}          => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE}     => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE}                 => {catsize=FALSE} 0.2079208

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## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE} => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE} => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE} => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE} => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE} => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139
## [32] {type=bird} => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE} => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE} => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE} => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE} => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE} => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE} => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE} => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE} => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE} => {catsize=FALSE} 0.1089109
## confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685

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## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769

##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}   => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}    => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}     => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE} => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}  => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}   => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}    => {catsize=TRUE} 0.1188119 0.2000000 0.4590909

##      lhs      rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}  => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174

##      lhs      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.305633
## [2] 1.181287

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,tail=FALSE}    => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}      => {catsize=FALSE} 0.2772277 0.7777778

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## lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
## lhs rhs support confidence
## [1] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168 0.8095238
## lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE} => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356

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## [30] {milk=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}        => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}       => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                   => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                   => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}     => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                 => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}     => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}     => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}      => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}  => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                 => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615

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## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}     => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}   => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}       => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}   => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}    => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}     => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE}  => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}   => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}   => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}   => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}       => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}       => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}    => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs      support  confidence

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## [1] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
## lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
## lhs rhs support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}     => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}     => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}      => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}        => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE}      => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}       => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}           => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}          => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}          => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}      => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}      => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}     => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.2673267 0.6136364
## lift

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## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}      => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}     => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}      => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}  => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}       => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}      => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}      => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}         => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}    => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}    => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}         => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}        => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}          => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}         => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}          => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}     => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}    => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783

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## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}    => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}   => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}       => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}   => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}      => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}     => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}            => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}              => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}            => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}     => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}        => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}    => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                       => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}         => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                  => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}         => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}          => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}     => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}        => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}        => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}          => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}        => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}        => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}        => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}         => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}          => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}     => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}              => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}         => {legs=FALSE} 0.1386139 0.4117647

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## [29] {hair=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}   => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}   => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691

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## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}        => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence

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## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
## lhs rhs support confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716

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## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}    => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213

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## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE}  => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE}  => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                    => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}     => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}     => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                 => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}       => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}            => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}      => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238

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## [36] {milk=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065

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## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218

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	lhs	rhs	support	confidence	lift
## [1]	{backbone=FALSE}	=> {fins=FALSE}	0.1782178	1.0000000	1.2023810
## [2]	{type=bird}	=> {fins=FALSE}	0.1980198	1.0000000	1.2023810
## [3]	{feathers=TRUE}	=> {fins=FALSE}	0.1980198	1.0000000	1.2023810
## [4]	{airborne=TRUE}	=> {fins=FALSE}	0.2376238	1.0000000	1.2023810
## [5]	{toothed=FALSE}	=> {fins=FALSE}	0.3960396	1.0000000	1.2023810
## [6]	{legs=TRUE}	=> {fins=FALSE}	0.7623762	0.9871795	1.1869658
## [7]	{hair=TRUE}	=> {fins=FALSE}	0.4059406	0.9534884	1.1464563
## [8]	{breathes=TRUE}	=> {fins=FALSE}	0.7524752	0.9500000	1.1422619
## [9]	{domestic=TRUE}	=> {fins=FALSE}	0.1188119	0.9230769	1.1098901

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## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}  => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}   => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}  => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}      => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}      => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}  => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}     => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}   => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}   => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}         => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.1851852
##
##      lift
## [1] 1.828054
## [2] 1.540305

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## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}      => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence

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## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}     => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift

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## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857

##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}        => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000

##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882

##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}       => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593

##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}          => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6190476

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## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {feathers=FALSE} 0.1287129
## [2] {fins=TRUE} => {feathers=FALSE} 0.1683168
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208
## [5] {legs=FALSE} => {feathers=FALSE} 0.2277228
## [6] {tail=FALSE} => {feathers=FALSE} 0.2574257
## [7] {eggs=FALSE} => {feathers=FALSE} 0.4158416
## [8] {hair=TRUE} => {feathers=FALSE} 0.4257426
## [9] {airborne=FALSE,catsize=FALSE} => {feathers=FALSE} 0.3465347
## [10] {airborne=FALSE,predator=FALSE} => {feathers=FALSE} 0.2673267
## [11] {airborne=FALSE} => {feathers=FALSE} 0.7227723
## [12] {catsize=TRUE} => {feathers=FALSE} 0.3762376
## [13] {predator=TRUE} => {feathers=FALSE} 0.4653465
## [14] {aquatic=TRUE} => {feathers=FALSE} 0.2970297
## [15] {aquatic=FALSE} => {feathers=FALSE} 0.5049505
## [16] {predator=FALSE} => {feathers=FALSE} 0.3366337
## [17] {catsize=FALSE} => {feathers=FALSE} 0.4257426

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## [18] {breathes=TRUE}          => {feathers=FALSE} 0.5940594
## [19] {legs=TRUE}               => {feathers=FALSE} 0.5742574
## [20] {milk=FALSE}              => {feathers=FALSE} 0.3960396
## [21] {eggs=TRUE}               => {feathers=FALSE} 0.3861386
## [22] {hair=FALSE}              => {feathers=FALSE} 0.3762376
## [23] {toothed=FALSE}           => {feathers=FALSE} 0.1980198
##      confidence lift
## [1] 1.0000000 1.2469136
## [2] 1.0000000 1.2469136
## [3] 1.0000000 1.2469136
## [4] 1.0000000 1.2469136
## [5] 1.0000000 1.2469136
## [6] 1.0000000 1.2469136
## [7] 1.0000000 1.2469136
## [8] 1.0000000 1.2469136
## [9] 0.9722222 1.2122771
## [10] 0.9642857 1.2023810
## [11] 0.9480519 1.1821388
## [12] 0.8636364 1.0768799
## [13] 0.8392857 1.0465168
## [14] 0.8333333 1.0390947
## [15] 0.7846154 0.9783476
## [16] 0.7555556 0.9421125
## [17] 0.7543860 0.9406541
## [18] 0.7500000 0.9351852
## [19] 0.7435897 0.9271921
## [20] 0.6666667 0.8312757
## [21] 0.6610169 0.8242310
## [22] 0.6551724 0.8169434
## [23] 0.5000000 0.6234568
##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {feathers=TRUE} 0.1980198 1.0000000 5.0500000
## [2] {hair=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276 1.7413793
## [3] {aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [4] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [5] {domestic=FALSE} => {feathers=TRUE} 0.1683168 0.1931818 0.9755682
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support
## [1] {type=fish}    => {feathers=FALSE} 0.1287129
## [2] {fins=TRUE}     => {feathers=FALSE} 0.1683168
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208
## [5] {legs=FALSE}    => {feathers=FALSE} 0.2277228
## [6] {tail=FALSE}    => {feathers=FALSE} 0.2574257
## [7] {eggs=FALSE}    => {feathers=FALSE} 0.4158416
## [8] {hair=TRUE}     => {feathers=FALSE} 0.4257426
## [9] {airborne=FALSE,catsize=FALSE} => {feathers=FALSE} 0.3465347
## [10] {airborne=FALSE,predator=FALSE} => {feathers=FALSE} 0.2673267
## [11] {airborne=FALSE} => {feathers=FALSE} 0.7227723
## [12] {catsize=TRUE}  => {feathers=FALSE} 0.3762376
## [13] {predator=TRUE}  => {feathers=FALSE} 0.4653465
## [14] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297
## [15] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505
## [16] {predator=FALSE} => {feathers=FALSE} 0.3366337

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## [17] {catsize=FALSE}          => {feathers=FALSE} 0.4257426
## [18] {breathes=TRUE}           => {feathers=FALSE} 0.5940594
## [19] {legs=TRUE}                => {feathers=FALSE} 0.5742574
## [20] {milk=FALSE}               => {feathers=FALSE} 0.3960396
## [21] {eggs=TRUE}                => {feathers=FALSE} 0.3861386
## [22] {hair=FALSE}               => {feathers=FALSE} 0.3762376
## [23] {toothed=FALSE}            => {feathers=FALSE} 0.1980198
##      confidence lift
## [1] 1.0000000 1.2469136
## [2] 1.0000000 1.2469136
## [3] 1.0000000 1.2469136
## [4] 1.0000000 1.2469136
## [5] 1.0000000 1.2469136
## [6] 1.0000000 1.2469136
## [7] 1.0000000 1.2469136
## [8] 1.0000000 1.2469136
## [9] 0.9722222 1.2122771
## [10] 0.9642857 1.2023810
## [11] 0.9480519 1.1821388
## [12] 0.8636364 1.0768799
## [13] 0.8392857 1.0465168
## [14] 0.8333333 1.0390947
## [15] 0.7846154 0.9783476
## [16] 0.7555556 0.9421125
## [17] 0.7543860 0.9406541
## [18] 0.7500000 0.9351852
## [19] 0.7435897 0.9271921
## [20] 0.6666667 0.8312757
## [21] 0.6610169 0.8242310
## [22] 0.6551724 0.8169434
## [23] 0.5000000 0.6234568
##      lhs      rhs      support  confidence lift
## [1] {type=bird}    => {feathers=TRUE} 0.1980198 1.0000000 5.0500000
## [2] {hair=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276 1.7413793
## [3] {aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [4] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [5] {domestic=FALSE} => {feathers=TRUE} 0.1683168 0.1931818 0.9755682
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}   => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}  => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}     => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}    => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}     => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}     => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}     => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}  => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}     => {venomous=FALSE} 0.1188119 0.9230769 1.0024814

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## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE} => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE} => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE} => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE} => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE} => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE} => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE} => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}              => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}            => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                  => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                 => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}             => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                  => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                  => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                  => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}              => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}             => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}              => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}             => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}            => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}            => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}            => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}             => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                  => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                 => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}             => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}             => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                 => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}            => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                 => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}           => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence
## [1] {type=fish}                  => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}   => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}   => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304

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## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                   => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162

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## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511

```



```

## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}       => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}  => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}    => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift

```

```

## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218

##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162

##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857

```

```

## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}     => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333

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## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence

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## [1] {hair=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765

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## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}              => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}         => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}         => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}          => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}           => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}       => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}            => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                   => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}            => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}       => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}       => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}         => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}         => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}              => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}          => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}         => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}          => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}               => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}          => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}              => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}         => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}           => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}          => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}            => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}          => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}          => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}           => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}          => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}      => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.2698413

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## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}      => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                    => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE}  => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882

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## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}    => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}       => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}    => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}   => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}     => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}   => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}     => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}    => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496

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## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}  => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}    => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}   => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}   => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}       => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}        => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}       => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091

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## [5] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162

```

```

## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence

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## [1] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871

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## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699

##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}=> {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}=> {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}=> {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.5000000

##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588

## [1] "Número de reglas con consecuente negado"

##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE}=> {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}     => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203

##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573

##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}    => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}       => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}   => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}   => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}        => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}       => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}         => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}        => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}         => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}    => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}   => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}   => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}      => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}    => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}        => {domestic=FALSE} 0.6534653 0.8461538 0.9711538

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## [18] {airborne=TRUE}  => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}      => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs                                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs                                support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}     => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}    => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs                                support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}     => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}        => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}    => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}    => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}          => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}        => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}          => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}         => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}          => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}    => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}    => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}    => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}      => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}     => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}          => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}     => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}         => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}          => {domestic=FALSE} 0.3267327 0.8048780 0.9237805

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## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}       => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}    => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}    => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}           => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}          => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}         => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}              => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}          => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}          => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}          => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}          => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}            => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1980198

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## [36] {eggs=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}  => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}  => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}   => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}   => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}  => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}   => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}  => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}             => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}            => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}            => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273

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## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352

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## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}    => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}  => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}    => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}    => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}        => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}       => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}        => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857

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## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                                support    confidence
## [1] {tail=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744

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## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762

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## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}   => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837

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## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support    confidence
## [1] {milk=TRUE,predator=FALSE}    => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE}         => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal}    => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal}    => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal}        => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal}       => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE}    => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE}        => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE}                   => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal}                 => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE}    => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE}       => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE}   => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE}                  => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE}       => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE}   => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE}      => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE}  => {hair=TRUE} 0.1881188 0.7916667

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## [25] {feathers=FALSE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE}      => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE}     => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catsize=TRUE}  => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE}=> {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catsize=TRUE}=> {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE}    => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE}=> {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE}=> {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE}=> {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE}=> {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE}    => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE}=> {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE}=> {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE}     => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE}   => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE}                => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE}=> {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE}     => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE}=> {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE}=> {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE}=> {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE}    => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE}     => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}    => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}   => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}         => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}     => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE}=> {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}=> {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE}=> {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE}=> {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}   => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}    => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE}=> {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}    => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}        => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}     => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}    => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}    => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE}=> {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE}=> {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}    => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}              => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}   => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}=> {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}               => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}    => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}              => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372

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[5] 2.3488372
[6] 2.3488372
[7] 2.3488372
[8] 2.3488372
[9] 2.3488372
[10] 2.2870257
[11] 2.2835917
[12] 2.2342598
[13] 2.2342598
[14] 2.2313953
[15] 2.2252142
[16] 2.1769711
[17] 2.1634027
[18] 2.1251384
[19] 2.0692137
[20] 1.9699925
[21] 1.9461794
[22] 1.9217759
[23] 1.8990599
[24] 1.8594961
[25] 1.8543452
[26] 1.8409805
[27] 1.8268734
[28] 1.8067979
[29] 1.7961696
[30] 1.7616279
[31] 1.7008821
[32] 1.6850354
[33] 1.6833333
[34] 1.5889193
[35] 1.5658915
[36] 1.5658915
[37] 1.5519103
[38] 1.5511189
[39] 1.5267442
[40] 1.5047238
[41] 1.4632101
[42] 1.4540421
[43] 1.4380636
[44] 1.4313227
[45] 1.4260797
[46] 1.4247045
[47] 1.4093023
[48] 1.3946221
[49] 1.3852117
[50] 1.3701550
[51] 1.3598531
[52] 1.3513858
[53] 1.3370304
[54] 1.3276036
[55] 1.3192099
[56] 1.3176404
[57] 1.3176404
[58] 1.3167724


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## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}      => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}     => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}    => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}     => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}     => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}     => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}    => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}   => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}         => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}   => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143

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## [6] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}      => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}    => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}   => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs      rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}    => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}     => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}   => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}   => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}  => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}  => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}  => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs      rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE}  => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}  => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097

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## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
## lhs rhs support confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE} => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE} => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE} => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish} => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE} => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE} => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805

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## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}       => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}   => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}       => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}    => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}  => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift

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## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                      rhs          support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}   => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}      => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}  => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}  => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}        => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}      => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}        => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}       => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}        => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}   => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}    => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}  => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}     => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}    => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}        => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}    => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}        => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=bird}                  => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}              => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}   => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}    => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}   => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}   => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}    => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}   => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}        => {toothed=FALSE} 0.3465347

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## [10] {milk=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}     => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}     => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}    => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}  => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}    => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE} => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}  => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}               => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}               => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}            => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE} => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE} => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}  => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}  => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}            => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500

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## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}     => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}   => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}        => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}   => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}    => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}     => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE}   => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}    => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}   => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}    => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}       => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}        => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence

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## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE} => {toothed=FALSE} 0.1188119 0.6666667
## lift
## [1] 1.727632
## [2] 1.683333
## lhs rhs support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE} => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE} => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
## lhs rhs support confidence
## [1] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
## lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
## lhs rhs support
## [1] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE} => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE} => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE} => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561

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## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205

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## [6] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE} => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE} => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE} => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE} => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741

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## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413

##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}          => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}          => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}       => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}          => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}          => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}         => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}          => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}          => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}      => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}      => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}       => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}     => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}     => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}          => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}     => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}            => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}       => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}       => {tail=TRUE} 0.2277228 0.5750000 0.7743333

##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041

##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661

##      lhs                rhs      support  confidence

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## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
## lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.371041
## lhs                                rhs            support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}     => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}    => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}    => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs                                rhs            support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}         => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}          => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}     => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475

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## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}    => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}       => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}   => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}   => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}        => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}       => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}         => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}        => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}         => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}    => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}    => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}    => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}      => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}     => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}         => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}     => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}        => {domestic=FALSE} 0.3366337 0.8095238 0.9291126

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## [20] {milk=TRUE}      => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                      rhs          support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}     => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}        => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}    => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}    => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}          => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}        => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}          => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}         => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}          => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}     => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}    => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}    => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}      => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}     => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}          => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}     => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}         => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}        => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}      => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                      rhs          support  confidence

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## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
## lhs rhs support confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
## lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE} => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE} => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE} => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE} => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE} => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE} => {backbone=FALSE} 0.1683168

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## [38] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                  => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570

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## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}                 => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}                 => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}             => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}                  => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}                => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}              => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}                  => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}               => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}              => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}              => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}                => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}                  => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}              => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}              => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}              => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}              => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}                  => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}              => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}              => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}              => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs          support
## [1] {aquatic=FALSE,tail=FALSE}  => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}     => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                      rhs          support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}     => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}      => {backbone=FALSE} 0.1683168

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## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}=> {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}=> {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}=> {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}  => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}=> {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}   => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}=> {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}=> {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE}=> {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556

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## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catSize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                      => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                        => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}         => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                   => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}           => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}           => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}            => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}          => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}        => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                       => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}           => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}         => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}          => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}          => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catSize=FALSE}       => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}         => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}          => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}       => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}         => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}           => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}          => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catSize=FALSE}        => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}               => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}          => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catSize=FALSE}      => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}         => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}              => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catSize=FALSE}       => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catSize=FALSE}      => {aquatic=TRUE} 0.1881188

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## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}        => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE}   => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                  => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                       => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}                 => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                  => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                  => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311

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## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs          support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}       => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}     => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE}  => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}      => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}   => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}    => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}      => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE}  => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE}  => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}       => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs          support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}        => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}         => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}     => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}       => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}    => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444

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## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE}=> {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}=> {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}    => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}       => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}              => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139

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## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198

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## [72] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}   => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}              => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}             => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}             => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704

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## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE}  => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}       => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}       => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}        => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}   => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}     => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}    => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}     => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}    => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}   => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}    => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}    => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}        => {feathers=FALSE} 0.5742574 0.7435897 0.9271921

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## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}        => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}       => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}    => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}        => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}        => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}          => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}            => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}        => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}        => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}           => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390

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## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727

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## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556

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## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000

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## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE} => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304

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## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs      rhs      support  confidence lift

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## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}  => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}  => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}     => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}   => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE} => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE} => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}    => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}  => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}    => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}     => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE} => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}  => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}     => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}    => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE} => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974

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## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}         => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}     => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}       => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}           => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}      => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1782178 0.3333333

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## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139

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## [14] {aquatic=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}         => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}         => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}        => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}      => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}        => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}      => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}       => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}       => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}        => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}          => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}           => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}  => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                     => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362

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## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}  => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}  => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}   => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}  => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149

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## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704  1.781305
## [2] 0.3636364  1.748918
## [3] 0.3518519  1.692240
## [4] 0.3000000  1.442857
## [5] 0.2941176  1.414566
## [6] 0.2816901  1.354795
## [7] 0.2500000  1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}              => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168
##      confidence lift

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## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}   => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}  => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}  => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}      => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}       => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}   => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}        => {predator=TRUE} 0.1485149

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## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE} => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE} => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE} => {predator=TRUE} 0.3861386
## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017

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## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}   => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}       => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}       => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE}  => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}      => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662

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##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}  => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}  => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}      => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,toothed=TRUE}   => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}      => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                      rhs      support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}   => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}      => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}   => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {predator=TRUE} 0.1782178 0.7826087

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## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
## lhs rhs support confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
## lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE} => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE} => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228

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## [39] {backbone=TRUE}          => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}              => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}               => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}               => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}          => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148

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## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE} => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE} => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE} => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}  => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}   => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}   => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}    => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}  => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}  => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE} => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}    => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}    => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}     => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}         => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,toothed=TRUE}     => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE}    => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}         => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}     => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs      support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}       => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}      => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465

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## [5] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
## lhs rhs support confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
## lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139

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## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198

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## [72] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}  => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}   => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}              => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}             => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}             => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704

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## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}  => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921

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## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}        => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}       => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}    => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,aquatic=FALSE}          => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}            => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}           => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}              => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}       => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs            support
## [1] {predator=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}            => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}              => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}            => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs            support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390

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## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}   => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727

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## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556

```

```

## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence lift
## [1] {milk=TRUE} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE} => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE} => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE} => {venomous=FALSE} 0.3960396 0.9523810 1.0343062

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## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                            => {backbone=TRUE} 0.1287129
## [2] {fins=TRUE}                             => {backbone=TRUE} 0.1683168
## [3] {type=bird}                             => {backbone=TRUE} 0.1980198
## [4] {feathers=TRUE}                         => {backbone=TRUE} 0.1980198
## [5] {milk=TRUE}                             => {backbone=TRUE} 0.4059406
## [6] {type=mammal}                           => {backbone=TRUE} 0.4059406
## [7] {toothed=TRUE}                         => {backbone=TRUE} 0.6039604
## [8] {venomous=FALSE,domestic=TRUE}          => {backbone=TRUE} 0.1188119
## [9] {aquatic=TRUE,tail=TRUE}                => {backbone=TRUE} 0.2574257
## [10] {aquatic=TRUE,breathes=TRUE}            => {backbone=TRUE} 0.1584158
## [11] {hair=TRUE,predator=TRUE}               => {backbone=TRUE} 0.1980198
## [12] {hair=TRUE,tail=TRUE}                   => {backbone=TRUE} 0.3267327
## [13] {predator=FALSE,catsize=TRUE}            => {backbone=TRUE} 0.1584158
## [14] {tail=TRUE,catsize=TRUE}                 => {backbone=TRUE} 0.3762376
## [15] {venomous=FALSE,tail=TRUE}              => {backbone=TRUE} 0.7029703
## [16] {tail=TRUE}                             => {backbone=TRUE} 0.7326733
## [17] {catsize=TRUE}                          => {backbone=TRUE} 0.4257426
## [18] {predator=TRUE,breathes=TRUE}            => {backbone=TRUE} 0.3663366
## [19] {domestic=TRUE}                        => {backbone=TRUE} 0.1188119
## [20] {hair=TRUE,domestic=FALSE}               => {backbone=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}           => {backbone=TRUE} 0.5049505
## [22] {breathes=TRUE,venomous=FALSE}          => {backbone=TRUE} 0.6633663
## [23] {aquatic=FALSE,predator=TRUE}            => {backbone=TRUE} 0.2376238
## [24] {airborne=FALSE,aquatic=FALSE}           => {backbone=TRUE} 0.3960396
## [25] {breathes=TRUE}                         => {backbone=TRUE} 0.6831683
## [26] {predator=TRUE,venomous=FALSE}           => {backbone=TRUE} 0.4257426
## [27] {airborne=FALSE,venomous=FALSE}          => {backbone=TRUE} 0.6039604
## [28] {airborne=FALSE,predator=FALSE}          => {backbone=TRUE} 0.2376238
## [29] {airborne=FALSE,legs=TRUE}               => {backbone=TRUE} 0.4554455
## [30] {legs=FALSE}                            => {backbone=TRUE} 0.1881188
## [31] {legs=TRUE}                             => {backbone=TRUE} 0.6336634

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## [32] {aquatic=FALSE} => {backbone=TRUE} 0.5247525
## [33] {predator=FALSE} => {backbone=TRUE} 0.3564356
## [34] {feathers=FALSE} => {backbone=TRUE} 0.6237624
## [35] {airborne=TRUE} => {backbone=TRUE} 0.1782178
## [36] {eggs=TRUE} => {backbone=TRUE} 0.4158416
## [37] {catsize=FALSE} => {backbone=TRUE} 0.3960396
## [38] {breathes=FALSE} => {backbone=TRUE} 0.1386139
## [39] {toothed=FALSE} => {backbone=TRUE} 0.2178218
##      confidence lift
## [1] 1.0000000 1.2168675
## [2] 1.0000000 1.2168675
## [3] 1.0000000 1.2168675
## [4] 1.0000000 1.2168675
## [5] 1.0000000 1.2168675
## [6] 1.0000000 1.2168675
## [7] 1.0000000 1.2168675
## [8] 1.0000000 1.2168675
## [9] 1.0000000 1.2168675
## [10] 1.0000000 1.2168675
## [11] 1.0000000 1.2168675
## [12] 1.0000000 1.2168675
## [13] 1.0000000 1.2168675
## [14] 1.0000000 1.2168675
## [15] 1.0000000 1.2168675
## [16] 0.9866667 1.2006426
## [17] 0.9772727 1.1892114
## [18] 0.9487179 1.1544640
## [19] 0.9230769 1.1232623
## [20] 0.9117647 1.1094968
## [21] 0.9107143 1.1082186
## [22] 0.8933333 1.0870683
## [23] 0.8888889 1.0816600
## [24] 0.8695652 1.0581456
## [25] 0.8625000 1.0495482
## [26] 0.8600000 1.0465060
## [27] 0.8591549 1.0454777
## [28] 0.8571429 1.0430293
## [29] 0.8518519 1.0365908
## [30] 0.8260870 1.0052383
## [31] 0.8205128 0.9984554
## [32] 0.8153846 0.9922150
## [33] 0.8000000 0.9734940
## [34] 0.7777778 0.9464525
## [35] 0.7500000 0.9126506
## [36] 0.7118644 0.8662446
## [37] 0.7017544 0.8539421
## [38] 0.6666667 0.8112450
## [39] 0.5500000 0.6692771
##      lhs      rhs      support  confidence lift
## [1] {toothed=FALSE} => {backbone=FALSE} 0.1782178 0.4500000 2.525000
## [2] {eggs=TRUE}      => {backbone=FALSE} 0.1683168 0.2881356 1.616761
## [3] {aquatic=FALSE} => {backbone=FALSE} 0.1188119 0.1846154 1.035897
##      lhs      rhs      support  confidence
## [1] {aquatic=FALSE,predator=TRUE} => {backbone=TRUE} 0.2376238 0.8888889

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## [2] {airborne=FALSE,aquatic=FALSE} => {backbone=TRUE} 0.3960396 0.8695652
## lift
## [1] 1.081660
## [2] 1.058146
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE} => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE} => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE} => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE} => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE} => {predator=TRUE} 0.3861386
## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970

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## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926

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## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}      => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}     => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                                rhs                support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                                rhs                support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                                rhs                support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                                rhs                support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}    => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}     => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}          => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs                support  confidence
## [1] {milk=FALSE,toothed=TRUE}      => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE}     => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE}     => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}           => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs                support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}     => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}      => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}        => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}     => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}         => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}      => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402

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## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE} => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE} => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE} => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE} => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE} => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE} => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE} => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE} => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE} => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE} => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE} => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE} => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE} => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE} => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834

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## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}          => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}        => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}       => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}     => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}          => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}         => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}      => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}           => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}           => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}           => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}      => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}      => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}        => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}           => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}       => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}       => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}       => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}        => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}            => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}           => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}        => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}        => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}           => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}       => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}            => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}       => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}          => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}        => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}       => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}     => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}          => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}         => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}      => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}           => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}           => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}           => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}      => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}      => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}        => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}           => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}       => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}       => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}       => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}        => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}            => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}           => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}        => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}        => {venomous=FALSE} 0.4950495 0.8771930 0.9526504

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## [24] {milk=FALSE}      => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                    => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}      => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}      => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}           => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}          => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}       => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}               => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}               => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}          => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}           => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}                => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}                => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}           => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}             => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}        => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}            => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}            => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}               => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}            => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}            => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}            => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}        => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}       => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}            => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}                => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}       => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}            => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}            => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}             => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                          => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}              => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}             => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}             => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                      => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                       => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                      => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278

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## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}           => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}       => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}           => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}        => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}           => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}            => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}          => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}           => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}           => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}       => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}       => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}        => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}       => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}       => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}           => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}       => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}             => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}        => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}       => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412

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## lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
## lhs rhs support confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## lift
## [1] 1.174419
## [2] 1.095661
## lhs rhs support confidence
## [1] {domestic=FALSE,catSize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
## lhs rhs support confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.371041
## lhs rhs support confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catSize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397

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##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}   => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}      => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}         => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}     => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}     => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}          => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}         => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}          => {domestic=FALSE} 0.1188119 0.9230769 1.0594406

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## [9] {milk=FALSE}      => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}  => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}  => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}   => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}      => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}  => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}    => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}   => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}  => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}       => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}  => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}  => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE} => {venomous=FALSE} 0.4950495 0.8771930 0.9526504

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## [24] {milk=FALSE}      => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support  confidence lift
## [1] {milk=TRUE}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}               => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}             => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                  => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                 => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}             => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                  => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                  => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                  => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}              => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}              => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}               => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}              => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}             => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}             => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}             => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}              => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                  => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                 => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}              => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}              => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                 => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}             => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                 => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}            => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1287129
## [3] {type=bird}                     => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                 => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                 => {airborne=TRUE} 0.2178218

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## [20] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}    => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}  => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}   => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}   => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}  => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}            => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}           => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846

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## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550

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## [10] {predator=TRUE} => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}     => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}  => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}   => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}     => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}    => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}=> {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}     => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}      => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}=> {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE} => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE}=> {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence

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## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175

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## [9] 1.588050
##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                        => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}               => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}             => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}              => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}             => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}           => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}       => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}           => {breathes=FALSE} 0.1386139

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## [14] {aquatic=TRUE, catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE, toothed=TRUE}         => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE, aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE, aquatic=TRUE}         => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE, aquatic=TRUE}        => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE, toothed=TRUE}      => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE, toothed=TRUE}        => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE, feathers=FALSE}      => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE, airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE, airborne=FALSE}       => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE, airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE, milk=FALSE}      => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE, eggs=TRUE}       => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE, predator=TRUE}       => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE, predator=TRUE}        => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE, predator=TRUE}       => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE, catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE, catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE, milk=FALSE}          => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE, catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE, eggs=TRUE}           => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE, domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE, catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE, domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE, predator=TRUE}   => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE, domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE, predator=TRUE}   => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE, catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE, domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE, airborne=FALSE}  => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE, domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE, domestic=FALSE}    => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                       => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362

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## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}  => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}  => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}   => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}  => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149

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## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704  1.781305
## [2] 0.3636364  1.748918
## [3] 0.3518519  1.692240
## [4] 0.3000000  1.442857
## [5] 0.2941176  1.414566
## [6] 0.2816901  1.354795
## [7] 0.2500000  1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}          => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}     => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}            => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
##      confidence lift

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## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}   => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}   => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}  => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}     => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}   => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}   => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}     => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence lift
## [1] {milk=TRUE}                  => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                  => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}                 => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}              => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                   => {venomous=FALSE} 0.4059406 0.9534884 1.0355089

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## [6] {eggs=FALSE}      => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}   => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}        => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}        => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}         => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}   => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}   => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}     => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}    => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}         => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}    => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}    => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}    => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}     => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}         => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}        => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}     => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}     => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}        => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}    => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}        => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}    => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}                => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}                => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}              => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}              => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}                  => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}                 => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}                  => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}                    => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}                => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}                 => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}                => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}                => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}                   => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}                => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}              => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}                => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}                => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}                  => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}              => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}              => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}              => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}              => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}                 => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}              => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}                   => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}              => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}                  => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}              => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}               => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}             => {milk=TRUE} 0.3168317 0.7441860

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## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE} => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE} => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415

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[11] 2.403331
[12] 2.403331
[13] 2.398588
[14] 2.343248
[15] 2.268935
[16] 2.246055
[17] 2.181882
[18] 2.170151
[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180
[61] 1.346667
[62] 1.336089
[63] 1.316071
[64] 1.300136

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## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs          support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}          => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}           => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}         => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}      => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}         => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}       => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}        => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}         => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}      => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}         => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}          => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}      => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}       => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs          support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs          support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
##      lhs                rhs          support  confidence
## [1] {hair=TRUE,tail=TRUE}    => {milk=TRUE} 0.3267327 1.0000000

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## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}  => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}  => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}     => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}     => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift

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## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}      => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}  => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {domestic=TRUE}                  => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE}         => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE}     => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE}                   => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE}     => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE}        => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE}     => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE}         => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE}     => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE}        => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE}        => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE}     => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE}     => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE}         => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE}        => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE}          => {predator=FALSE} 0.2277228
## [17] {type=bird}                       => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE}                   => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE}      => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE}     => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE}     => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE}                   => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE}         => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE}     => {predator=FALSE} 0.3861386

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## [25] {catsize=FALSE}          => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE}    => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE}   => {predator=FALSE} 0.2871287
## [29] {milk=TRUE}              => {predator=FALSE} 0.1881188
## [30] {type=mammal}            => {predator=FALSE} 0.1881188
## [31] {tail=FALSE}            => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE}            => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE}             => {predator=FALSE} 0.2574257
## [34] {milk=FALSE}            => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE}        => {predator=FALSE} 0.3366337
## [36] {hair=FALSE}           => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE}          => {predator=FALSE} 0.1584158
##      confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770

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## [3] {fins=TRUE}      => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE} => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE} => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}   => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}    => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}    => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE} => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                                rhs      support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                                rhs      support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}     => {venomous=FALSE} 0.1188119 0.9230769 1.0024814

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## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE} => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE} => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE} => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE} => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE} => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE} => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE} => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}               => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}             => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                  => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                 => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}              => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                  => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                  => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                  => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}              => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}              => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}               => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}              => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}            => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}            => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}            => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}             => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                  => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                 => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}              => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}              => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                 => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}            => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                 => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}            => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {aquatic=TRUE,catsize=TRUE}              => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE}          => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}                 => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}              => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}                   => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}              => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}                 => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}               => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                          => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                            => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}                 => {predator=TRUE} 0.1485149

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## [12] {hair=FALSE,toothed=TRUE}      => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                    => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}      => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}       => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}    => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}     => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE}=> {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}  => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}  => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}    => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                 => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}=> {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}     => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}    => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}     => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}         => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}     => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}      => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}     => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}         => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                  => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}    => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                    => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                    => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745

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## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE}  => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}     => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE}  => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000

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## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}      => {predator=TRUE} 0.2277228 0.5897436
## lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
## lhs rhs support confidence
## [1] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
## lhs rhs support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589

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## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs            support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {type=fish}                    => {tail=TRUE} 0.1287129 1.0000000
## [2] {type=bird}                    => {tail=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}                => {tail=TRUE} 0.1980198 1.0000000
## [4] {backbone=TRUE,breathes=FALSE} => {tail=TRUE} 0.1386139 1.0000000
## [5] {airborne=TRUE,backbone=TRUE}    => {tail=TRUE} 0.1782178 1.0000000
## [6] {toothed=FALSE,backbone=TRUE}    => {tail=TRUE} 0.2178218 1.0000000
## [7] {backbone=TRUE,legs=FALSE}       => {tail=TRUE} 0.1782178 0.9473684
## [8] {fins=TRUE}                     => {tail=TRUE} 0.1584158 0.9411765
## [9] {predator=FALSE,catsize=TRUE}    => {tail=TRUE} 0.1485149 0.9375000
## [10] {hair=FALSE,backbone=TRUE}       => {tail=TRUE} 0.4059406 0.9318182
## [11] {hair=FALSE,catsize=TRUE}        => {tail=TRUE} 0.1287129 0.9285714
## [12] {eggs=TRUE,backbone=TRUE}        => {tail=TRUE} 0.3861386 0.9285714
## [13] {milk=FALSE,backbone=TRUE}       => {tail=TRUE} 0.3861386 0.9285714
## [14] {eggs=TRUE,catsize=TRUE}         => {tail=TRUE} 0.1188119 0.9230769
## [15] {milk=FALSE,catsize=TRUE}        => {tail=TRUE} 0.1089109 0.9166667
## [16] {predator=FALSE,backbone=TRUE}    => {tail=TRUE} 0.3267327 0.9166667
## [17] {aquatic=FALSE,backbone=TRUE}     => {tail=TRUE} 0.4752475 0.9056604
## [18] {backbone=TRUE,domestic=FALSE}    => {tail=TRUE} 0.6336634 0.9014085
## [19] {backbone=TRUE,catsize=FALSE}     => {tail=TRUE} 0.3564356 0.9000000
## [20] {eggs=FALSE,domestic=FALSE}       => {tail=TRUE} 0.2970297 0.8823529
## [21] {milk=TRUE,domestic=FALSE}        => {tail=TRUE} 0.2871287 0.8787879
## [22] {domestic=FALSE,type=mammal}      => {tail=TRUE} 0.2871287 0.8787879
## [23] {predator=FALSE,toothed=TRUE}     => {tail=TRUE} 0.2079208 0.8750000
## [24] {hair=FALSE,toothed=TRUE}         => {tail=TRUE} 0.1980198 0.8695652
## [25] {domestic=FALSE,catsize=TRUE}     => {tail=TRUE} 0.3267327 0.8684211
## [26] {aquatic=FALSE,toothed=TRUE}      => {tail=TRUE} 0.3267327 0.8684211
## [27] {toothed=TRUE,domestic=FALSE}     => {tail=TRUE} 0.4455446 0.8653846
## [28] {catsize=TRUE}                   => {tail=TRUE} 0.3762376 0.8636364
## [29] {toothed=TRUE,venomous=FALSE}     => {tail=TRUE} 0.4851485 0.8596491
## [30] {eggs=FALSE}                     => {tail=TRUE} 0.3564356 0.8571429
## [31] {milk=FALSE,toothed=TRUE}         => {tail=TRUE} 0.1782178 0.8571429
## [32] {milk=TRUE}                       => {tail=TRUE} 0.3465347 0.8536585
## [33] {type=mammal}                     => {tail=TRUE} 0.3465347 0.8536585
## [34] {predator=TRUE,breathes=TRUE}     => {tail=TRUE} 0.3168317 0.8205128
## [35] {airborne=TRUE,venomous=FALSE}    => {tail=TRUE} 0.1782178 0.8181818
## [36] {aquatic=FALSE,predator=TRUE}     => {tail=TRUE} 0.2178218 0.8148148
## [37] {hair=TRUE,predator=TRUE}         => {tail=TRUE} 0.1584158 0.8000000
## [38] {hair=TRUE,domestic=FALSE}        => {tail=TRUE} 0.2673267 0.7941176
## [39] {venomous=FALSE,legs=FALSE}       => {tail=TRUE} 0.1485149 0.7894737
## [40] {breathes=TRUE,venomous=FALSE}    => {tail=TRUE} 0.5841584 0.7866667
## [41] {legs=FALSE}                     => {tail=TRUE} 0.1782178 0.7826087
## [42] {airborne=FALSE,aquatic=FALSE}    => {tail=TRUE} 0.3564356 0.7826087
## [43] {airborne=FALSE,breathes=TRUE}    => {tail=TRUE} 0.4257426 0.7678571
## [44] {hair=TRUE}                       => {tail=TRUE} 0.3267327 0.7674419

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## [45] {breathes=TRUE,domestic=FALSE} => {tail=TRUE} 0.5148515 0.7647059
## [46] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
## [47] {aquatic=FALSE} => {tail=TRUE} 0.4851485 0.7538462
## [48] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000
## [49] {predator=TRUE} => {tail=TRUE} 0.4158416 0.7500000
## [50] {airborne=FALSE,predator=FALSE} => {tail=TRUE} 0.2079208 0.7500000
## [51] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364
## [52] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333
## [53] {hair=FALSE} => {tail=TRUE} 0.4158416 0.7241379
## [54] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123
## [55] {eggs=TRUE} => {tail=TRUE} 0.3861386 0.6610169
## [56] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228
## [57] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000
## lift
## [1] 1.3466667
## [2] 1.3466667
## [3] 1.3466667
## [4] 1.3466667
## [5] 1.3466667
## [6] 1.3466667
## [7] 1.2757895
## [8] 1.2674510
## [9] 1.2625000
## [10] 1.2548485
## [11] 1.2504762
## [12] 1.2504762
## [13] 1.2504762
## [14] 1.2430769
## [15] 1.2344444
## [16] 1.2344444
## [17] 1.2196226
## [18] 1.2138967
## [19] 1.2120000
## [20] 1.1882353
## [21] 1.1834343
## [22] 1.1834343
## [23] 1.1783333
## [24] 1.1710145
## [25] 1.1694737
## [26] 1.1694737
## [27] 1.1653846
## [28] 1.1630303
## [29] 1.1576608
## [30] 1.1542857
## [31] 1.1542857
## [32] 1.1495935
## [33] 1.1495935
## [34] 1.1049573
## [35] 1.1018182
## [36] 1.0972840
## [37] 1.0773333
## [38] 1.0694118
## [39] 1.0631579
## [40] 1.0593778

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## [41] 1.0539130
## [42] 1.0539130
## [43] 1.0340476
## [44] 1.0334884
## [45] 1.0298039
## [46] 1.0163522
## [47] 1.0151795
## [48] 1.0100000
## [49] 1.0100000
## [50] 1.0100000
## [51] 0.9946970
## [52] 0.9875556
## [53] 0.9751724
## [54] 0.9144033
## [55] 0.8901695
## [56] 0.8741520
## [57] 0.7743333
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444 3.6688034
## [2] {fins=FALSE}      => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [3] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [4] {predator=TRUE}   => {tail=FALSE} 0.1386139 0.2500000 0.9711538
## [5] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591 0.9189413
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [2] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [3] {milk=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2871287 0.8787879
## [4] {domestic=FALSE,type=mammal}    => {tail=TRUE} 0.2871287 0.8787879
## [5] {domestic=FALSE,catsize=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [6] {toothed=TRUE,domestic=FALSE}    => {tail=TRUE} 0.4455446 0.8653846
## [7] {hair=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2673267 0.7941176
## [8] {breathes=TRUE,domestic=FALSE}   => {tail=TRUE} 0.5148515 0.7647059
## [9] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
##      lift
## [1] 1.213897
## [2] 1.188235
## [3] 1.183434
## [4] 1.183434
## [5] 1.169474
## [6] 1.165385
## [7] 1.069412
## [8] 1.029804
## [9] 1.016352
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [2] {aquatic=FALSE,predator=TRUE}   => {tail=TRUE} 0.2178218 0.8148148
## [3] {hair=TRUE,predator=TRUE}      => {tail=TRUE} 0.1584158 0.8000000
##      lift
## [1] 1.104957
## [2] 1.097284
## [3] 1.077333
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [2] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818

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## [3] {venomous=FALSE,legs=FALSE}    => {tail=TRUE} 0.1485149 0.7894737
## [4] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
## lift
## [1] 1.157661
## [2] 1.101818
## [3] 1.063158
## [4] 1.059378
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE} => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE} => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE} => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE} => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077

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## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}  => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}      => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}   => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}     => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}    => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}     => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}      => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}  => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}  => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}   => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}     => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}      => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}  => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}  => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence

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## [1] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
## lhs                                rhs                support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
## lift
## [1] 1.174419
## [2] 1.095661
## lhs                                rhs                support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
## lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
## lhs                                rhs                support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.371041
## lhs                                rhs                support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs                                rhs                support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428

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## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}    => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}     => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}     => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}    => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}       => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}      => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}  => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}       => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}       => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}  => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}  => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}    => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}   => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}  => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334

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## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}      => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}    => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}       => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}         => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}        => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}   => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                    => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}      => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}       => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                   => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                     => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                   => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}        => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}          => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}           => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                    => {aquatic=FALSE} 0.6435644

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## [43] {toothed=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}   => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE}                  => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}                   => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}                     => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}                 => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}                  => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}                      => {aquatic=FALSE} 0.2871287
##      confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462

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## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}              => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}              => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}         => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}             => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}          => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}              => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}         => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}          => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}          => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111

##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441

##      lhs                      rhs      support  confidence
## [1] {fins=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}        => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936

##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969

##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441

##      lhs                      rhs      support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE}   => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}    => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE}   => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353

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## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}    => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}     => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}    => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs            rhs            support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}    => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}       => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}   => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}   => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}        => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}       => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}         => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}        => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}         => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}    => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}   => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}   => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}      => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}     => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}         => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}     => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}        => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}         => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs            rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs            rhs            support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift

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## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}            => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}            => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}               => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}          => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}           => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}          => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}           => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}            => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}        => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}             => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                    => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}            => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}         => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}          => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}         => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}         => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}           => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}           => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}               => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}          => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}            => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}           => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}            => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}                => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}            => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}                => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}           => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}             => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}            => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}              => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}         => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}            => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}            => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}         => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}             => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}         => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}            => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}        => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}         => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}        => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}           => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}        => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}        => {fins=TRUE} 0.1683168 0.2615385

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## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                    => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054

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## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}    => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}    => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}   => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}     => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}   => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}     => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}    => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}         => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}    => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}     => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}       => {fins=FALSE} 0.4257426 0.7413793 0.8914204

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## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs          support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                      rhs          support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957

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## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}  => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}   => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}  => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980

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## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556

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## [4] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054

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## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}=> {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}=> {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}=> {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}       => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}        => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}            => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}          => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}            => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}         => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}         => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}             => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}        => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}        => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}         => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                      => {tail=FALSE} 0.2475248 0.2976190

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## [33] {predator=TRUE,legs=TRUE}      => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs      rhs      support  confidence lift
## [1] {type=fish}  => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE} => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}    => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE} => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}   => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}    => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}  => {tail=TRUE} 0.3465347 0.8536585 1.1495935

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## [9] {legs=FALSE}      => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}       => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}  => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}  => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}=> {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}=> {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}   => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}=> {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}      => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000

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## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}      => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}       => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE}   => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE}   => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}    => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}   => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}       => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111

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## [5] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}         => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}        => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}      => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}       => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}    => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}    => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}        => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}    => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}     => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                  => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}     => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}              => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}               => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}              => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383

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## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413

##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}       => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}    => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}       => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}       => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}     => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}      => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}      => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}  => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}  => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}    => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}     => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}       => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}   => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}  => {tail=TRUE} 0.2277228 0.5750000 0.7743333

##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041

##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661

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##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}   => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}   => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}   => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}    => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}   => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846

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## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}           => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}        => {airborne=TRUE} 0.1287129
## [3] {type=bird}                          => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                     => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}         => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}        => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}             => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}          => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}          => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}          => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}              => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}              => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}             => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}            => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}             => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}              => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}            => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}          => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                       => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}                  => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}                  => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}          => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}              => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}          => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}            => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}          => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}            => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}                 => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}            => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}                 => {airborne=TRUE} 0.2178218

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## [31] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE}=> {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}   => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}=> {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}     => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}    => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}               => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}              => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667

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## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}       => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}        => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}    => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}        => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}   => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}        => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}        => {airborne=FALSE} 0.3663366 0.6271186 0.8225842

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## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE} => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}       => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167

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## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs            support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129

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##      confidence lift
## [1] 0.7142857  3.005952
## [2] 0.5769231  2.427885
## [3] 0.5769231  2.427885
## [4] 0.5172414  2.176724
## [5] 0.5000000  2.104167
## [6] 0.4358974  1.834402
## [7] 0.4146341  1.744919
## [8] 0.4146341  1.744919
## [9] 0.3823529  1.609069
##      lhs                                     rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                     rhs      support  confidence
## [1] {milk=TRUE,toothed=TRUE}      => {eggs=FALSE} 0.3960396 1.0000000
## [2] {milk=TRUE,aquatic=FALSE}      => {eggs=FALSE} 0.3465347 1.0000000
## [3] {toothed=TRUE,type=mammal}      => {eggs=FALSE} 0.3960396 1.0000000
## [4] {aquatic=FALSE,type=mammal}    => {eggs=FALSE} 0.3465347 1.0000000
## [5] {hair=TRUE,toothed=TRUE}        => {eggs=FALSE} 0.3762376 1.0000000
## [6] {milk=TRUE}                    => {eggs=FALSE} 0.3960396 0.9756098
## [7] {type=mammal}                  => {eggs=FALSE} 0.3960396 0.9756098
## [8] {hair=TRUE,backbone=TRUE}      => {eggs=FALSE} 0.3762376 0.9743590
## [9] {hair=TRUE,airborne=FALSE}     => {eggs=FALSE} 0.3564356 0.9729730
## [10] {hair=TRUE,tail=TRUE}          => {eggs=FALSE} 0.3168317 0.9696970
## [11] {hair=TRUE,catsize=TRUE}       => {eggs=FALSE} 0.2871287 0.9666667
## [12] {hair=TRUE,predator=TRUE}      => {eggs=FALSE} 0.1881188 0.9500000
## [13] {aquatic=FALSE,toothed=TRUE}    => {eggs=FALSE} 0.3465347 0.9210526
## [14] {toothed=TRUE,catsize=TRUE}     => {eggs=FALSE} 0.3069307 0.8857143
## [15] {toothed=TRUE,legs=TRUE}        => {eggs=FALSE} 0.3663366 0.8809524
## [16] {toothed=TRUE,breathes=TRUE}    => {eggs=FALSE} 0.3960396 0.8510638
## [17] {toothed=TRUE,fins=FALSE}       => {eggs=FALSE} 0.3663366 0.8409091
## [18] {aquatic=FALSE,catsize=TRUE}    => {eggs=FALSE} 0.2574257 0.8387097
## [19] {feathers=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.8157895
## [20] {breathes=TRUE,catsize=TRUE}    => {eggs=FALSE} 0.3069307 0.7948718
## [21] {predator=FALSE,toothed=TRUE}   => {eggs=FALSE} 0.1881188 0.7916667
## [22] {legs=TRUE,catsize=TRUE}        => {eggs=FALSE} 0.2772277 0.7567568
## [23] {airborne=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.3069307 0.7560976
## [24] {predator=FALSE,catsize=TRUE}   => {eggs=FALSE} 0.1188119 0.7500000

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## [25] {fins=FALSE,catsize=TRUE}      => {eggs=FALSE} 0.2673267 0.7500000
## [26] {airborne=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3366337 0.7391304
## [27] {feathers=FALSE,aquatic=FALSE} => {eggs=FALSE} 0.3564356 0.7058824
## [28] {toothed=TRUE,venomous=FALSE}  => {eggs=FALSE} 0.3960396 0.7017544
## [29] {airborne=FALSE,breathes=TRUE} => {eggs=FALSE} 0.3861386 0.6964286
## [30] {feathers=FALSE,breathes=TRUE} => {eggs=FALSE} 0.4059406 0.6833333
## [31] {toothed=TRUE,tail=TRUE}      => {eggs=FALSE} 0.3465347 0.6730769
## [32] {airborne=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3564356 0.6666667
## [33] {aquatic=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3465347 0.6603774
## [34] {feathers=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3762376 0.6551724
## [35] {feathers=FALSE,tail=TRUE}    => {eggs=FALSE} 0.3564356 0.6545455
## [36] {feathers=FALSE,backbone=TRUE} => {eggs=FALSE} 0.4059406 0.6507937
## [37] {aquatic=FALSE,tail=TRUE}     => {eggs=FALSE} 0.3069307 0.6326531
## [38] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [39] {airborne=FALSE,predator=FALSE} => {eggs=FALSE} 0.1683168 0.6071429
## [40] {airborne=FALSE,backbone=TRUE} => {eggs=FALSE} 0.3861386 0.6000000
## [41] {airborne=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3564356 0.6000000
## [42] {airborne=FALSE,tail=TRUE}    => {eggs=FALSE} 0.3366337 0.5964912
## [43] {feathers=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3762376 0.5937500
## [44] {backbone=TRUE,breathes=TRUE} => {eggs=FALSE} 0.3960396 0.5797101
## [45] {legs=TRUE,tail=TRUE}        => {eggs=FALSE} 0.3267327 0.5789474
## [46] {backbone=TRUE,legs=TRUE}     => {eggs=FALSE} 0.3663366 0.5781250
## [47] {aquatic=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3465347 0.5737705
## [48] {breathes=TRUE,tail=TRUE}     => {eggs=FALSE} 0.3465347 0.5737705
## [49] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
## [50] {backbone=TRUE,fins=FALSE}    => {eggs=FALSE} 0.3663366 0.5606061
## [51] {fins=FALSE,tail=TRUE}       => {eggs=FALSE} 0.3267327 0.5593220
## [52] {feathers=FALSE,predator=FALSE} => {eggs=FALSE} 0.1881188 0.5588235
## [53] {feathers=FALSE,airborne=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE}    => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE}    => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE}              => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE}   => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481

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## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065
## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}   => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}  => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE} => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}     => {eggs=TRUE} 0.5346535 0.9310345 1.5938048

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## [7] {airborne=TRUE} => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE} => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE} => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE} => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE} => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE} => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE} => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
## lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
## lhs rhs support confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2673267 0.7500000
## lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897
## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474

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## [18] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}       => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}     => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}      => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}      => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}         => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}         => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}    => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}      => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}      => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}               => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341

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## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE} => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE} => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal} => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE} => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE} => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE} => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222

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## [12] {catsize=TRUE}    => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}  => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}   => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}      => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}     => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}   => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294

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## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catSize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000

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## [2] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}  => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
## lhs rhs support confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}    => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}      => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}     => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}      => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}     => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}      => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}  => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773

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## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}     => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}    => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}     => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}        => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}    => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}    => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}         => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}        => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}          => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}         => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}          => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}    => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}    => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}     => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}    => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}       => {domestic=FALSE} 0.3762376 0.8636364 0.9912190

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## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE} => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE} => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE} => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE} => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158

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## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                    => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761

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## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}      => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}      => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}  => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}    => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}   => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}      => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}   => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}  => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}  => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}     => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}      => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE} => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE} => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE} => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}  => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}      => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}  => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}  => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}  => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}  => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352

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## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs                                support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,tail=FALSE}    => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catSize=FALSE}   => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs                                support
## [1] {tail=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catSize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catSize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catSize=FALSE}     => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catSize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889

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## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}  => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence lift

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## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}=> {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}=> {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}       => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}   => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}   => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}  => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                rhs      support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}   => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}  => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}       => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}   => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}   => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756

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## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support  confidence lift
## [1] {milk=TRUE}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}              => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}            => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                  => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                 => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}             => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                   => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                   => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                   => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}              => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}              => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}                => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}              => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                   => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}              => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}              => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}              => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}              => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                   => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                  => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}               => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}               => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                  => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}              => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                  => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}              => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {toothed=FALSE,tail=FALSE}    => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}         => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}     => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}     => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}     => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}      => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}         => {backbone=FALSE} 0.1683168

```

```

## [22] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}         => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}          => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873

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## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109

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## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
## lhs rhs support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}     => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}  => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}          => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}          => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}           => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}      => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168

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## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}        => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}         => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}         => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}             => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {catsize=FALSE,type=bird}              => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}            => {airborne=TRUE} 0.1287129
## [3] {type=bird}                             => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                         => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}            => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}          => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}               => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}            => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}           => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}          => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}               => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}               => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}              => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}              => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}              => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}               => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}              => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}          => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                         => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}                   => {airborne=TRUE} 0.2178218

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## [21] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}  => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}   => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}  => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}    => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}   => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}              => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}             => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222

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## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}           => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE}     => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}         => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}        => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}          => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}           => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}         => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}        => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}      => {airborne=FALSE} 0.4851485 0.8750000 1.1477273

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## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}      => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000

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## [2] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}=> {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050

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##      lhs                                rhs                                support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}        => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs                                support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                        => {airborne=FALSE} 0.1287129
## [2] {fins=TRUE}                         => {airborne=FALSE} 0.1683168
## [3] {breathes=FALSE}                   => {airborne=FALSE} 0.2079208
## [4] {legs=FALSE}                      => {airborne=FALSE} 0.2277228
## [5] {aquatic=TRUE,toothed=TRUE}         => {airborne=FALSE} 0.2277228
## [6] {feathers=FALSE,aquatic=TRUE}       => {airborne=FALSE} 0.2970297
## [7] {milk=TRUE,predator=TRUE}           => {airborne=FALSE} 0.2178218
## [8] {predator=TRUE,type=mammal}         => {airborne=FALSE} 0.2178218
## [9] {eggs=FALSE,predator=TRUE}          => {airborne=FALSE} 0.2277228
## [10] {hair=TRUE,predator=TRUE}           => {airborne=FALSE} 0.1980198
## [11] {feathers=FALSE,catsize=TRUE}       => {airborne=FALSE} 0.3762376
## [12] {predator=TRUE,toothed=TRUE}        => {airborne=FALSE} 0.3663366
## [13] {hair=FALSE,toothed=TRUE}           => {airborne=FALSE} 0.2277228
## [14] {eggs=TRUE,toothed=TRUE}           => {airborne=FALSE} 0.1980198

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## [15] {milk=FALSE,toothed=TRUE}      => {airborne=FALSE} 0.2079208
## [16] {feathers=FALSE,predator=TRUE}  => {airborne=FALSE} 0.4554455
## [17] {feathers=FALSE,backbone=TRUE} => {airborne=FALSE} 0.6039604
## [18] {toothed=TRUE}                  => {airborne=FALSE} 0.5841584
## [19] {predator=TRUE,catsize=TRUE}    => {airborne=FALSE} 0.2673267
## [20] {feathers=FALSE,tail=TRUE}      => {airborne=FALSE} 0.5247525
## [21] {eggs=FALSE}                   => {airborne=FALSE} 0.3960396
## [22] {milk=TRUE}                    => {airborne=FALSE} 0.3861386
## [23] {type=mammal}                  => {airborne=FALSE} 0.3861386
## [24] {hair=FALSE,feathers=FALSE}     => {airborne=FALSE} 0.3564356
## [25] {catsize=TRUE}                 => {airborne=FALSE} 0.4059406
## [26] {predator=TRUE,tail=FALSE}      => {airborne=FALSE} 0.1287129
## [27] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [28] {feathers=FALSE,domestic=FALSE} => {airborne=FALSE} 0.6336634
## [29] {predator=TRUE}                => {airborne=FALSE} 0.4851485
## [30] {aquatic=TRUE}                 => {airborne=FALSE} 0.3069307
## [31] {hair=TRUE}                    => {airborne=FALSE} 0.3663366
## [32] {venomous=FALSE,tail=FALSE}     => {airborne=FALSE} 0.1782178
## [33] {backbone=TRUE,domestic=FALSE}  => {airborne=FALSE} 0.5544554
## [34] {backbone=TRUE}                => {airborne=FALSE} 0.6435644
## [35] {tail=FALSE}                   => {airborne=FALSE} 0.1980198
## [36] {tail=TRUE}                    => {airborne=FALSE} 0.5643564
## [37] {aquatic=FALSE}                => {airborne=FALSE} 0.4554455
## [38] {hair=FALSE}                   => {airborne=FALSE} 0.3960396
## [39] {backbone=FALSE}               => {airborne=FALSE} 0.1188119
## [40] {milk=FALSE}                   => {airborne=FALSE} 0.3762376
## [41] {eggs=TRUE}                    => {airborne=FALSE} 0.3663366
## [42] {predator=FALSE}               => {airborne=FALSE} 0.2772277
## [43] {toothed=FALSE}                => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 1.3116883
## [2] 1.0000000 1.3116883
## [3] 1.0000000 1.3116883
## [4] 1.0000000 1.3116883
## [5] 1.0000000 1.3116883
## [6] 1.0000000 1.3116883
## [7] 1.0000000 1.3116883
## [8] 1.0000000 1.3116883
## [9] 1.0000000 1.3116883
## [10] 1.0000000 1.3116883
## [11] 1.0000000 1.3116883
## [12] 1.0000000 1.3116883
## [13] 1.0000000 1.3116883
## [14] 1.0000000 1.3116883
## [15] 1.0000000 1.3116883
## [16] 0.9787234 1.2837800
## [17] 0.9682540 1.2700474
## [18] 0.9672131 1.2686821
## [19] 0.9642857 1.2648423
## [20] 0.9636364 1.2639906
## [21] 0.9523810 1.2492270
## [22] 0.9512195 1.2477035
## [23] 0.9512195 1.2477035
## [24] 0.9473684 1.2426521

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## [25] 0.9318182 1.2222550
## [26] 0.9285714 1.2179963
## [27] 0.9178082 1.2038783
## [28] 0.9014085 1.1823669
## [29] 0.8750000 1.1477273
## [30] 0.8611111 1.1295094
## [31] 0.8604651 1.1286620
## [32] 0.8181818 1.0731995
## [33] 0.7887324 1.0345711
## [34] 0.7831325 1.0272258
## [35] 0.7692308 1.0089910
## [36] 0.7600000 0.9968831
## [37] 0.7076923 0.9282717
## [38] 0.6896552 0.9046126
## [39] 0.6666667 0.8744589
## [40] 0.6333333 0.8307359
## [41] 0.6271186 0.8225842
## [42] 0.6222222 0.8161616
## [43] 0.4500000 0.5902597

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [2] {feathers=TRUE}  => {airborne=TRUE} 0.1584158 0.8000000 3.3666667
## [3] {toothed=FALSE}  => {airborne=TRUE} 0.2178218 0.5500000 2.3145833
## [4] {aquatic=FALSE}  => {airborne=TRUE} 0.1881188 0.2923077 1.2301282
## [5] {venomous=FALSE} => {airborne=TRUE} 0.2178218 0.2365591 0.9955197

##      lhs                      rhs      support
## [1] {feathers=FALSE,venomous=FALSE} => {airborne=FALSE} 0.6633663
## [2] {venomous=FALSE,tail=FALSE}    => {airborne=FALSE} 0.1782178
##      confidence lift
## [1] 0.9178082 1.203878
## [2] 0.8181818 1.073200
## [1] "Número de reglas con consecuente negado"

##      lhs                      rhs      support  confidence
## [1] {type=fish}      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}    => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}    => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}              => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}          => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667

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## [22] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980

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[9] 4.827206
[10] 4.690402
[11] 4.391304
[12] 4.193772
[13] 3.960784
[14] 3.874680
[15] 3.861765
[16] 3.861765
[17] 3.677871
[18] 3.677871
[19] 3.656109
[20] 3.366667
[21] 3.366667
[22] 3.258065
[23] 2.970588
[24] 2.345201
[25] 2.227941
[26] 2.121849
[27] 2.087440
[28] 2.087440
[29] 2.032508
[30] 2.025401
[31] 1.980392
[32] 1.980392
[33] 1.930882
[34] 1.930882
[35] 1.838936
[36] 1.838936
[37] 1.828054
[38] 1.828054
[39] 1.815359
[40] 1.728342
[41] 1.711864
[42] 1.697479
[43] 1.667699
[44] 1.667699
[45] 1.643304
[46] 1.643304
[47] 1.603175
[48] 1.599548
[49] 1.576230
[50] 1.553846
[51] 1.540305
[52] 1.536511
[53] 1.425882
[54] 1.397924
[55] 1.383562
[56] 1.371041
[57] 1.371041
[58] 1.345172
[59] 1.338857
[60] 1.338857
[61] 1.338857
[62] 1.320261

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## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}  => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176

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## [11] 1.100218
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}       => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}       => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1683168 0.2328767

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## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs rhs support confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172

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## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}   => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}         => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680

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## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018

##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699

##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000

##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588

## [1] "Número de reglas con consecuente negado"

##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000

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## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}          => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}          => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}      => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}       => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}           => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}           => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}        => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}        => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}       => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}          => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}       => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}       => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}           => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}  => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}      => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}      => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}       => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                     => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}        => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}       => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}       => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                 => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                  => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                 => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545

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## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}          => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}           => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}        => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}          => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}           => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}         => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}          => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}           => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}      => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}       => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}        => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}      => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}      => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}           => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}      => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}            => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}       => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}       => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419

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## [2] 1.095661
##      lhs                                     rhs          support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                     rhs          support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                     rhs          support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}       => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}   => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}        => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                     rhs          support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                     rhs          support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}        => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}     => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963

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## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {toothed=FALSE,tail=FALSE}    => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}         => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}        => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}         => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}         => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}       => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}           => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}           => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}            => {backbone=FALSE} 0.1287129

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## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                    => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}=> {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551

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## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}      => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}      => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}  => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}    => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}   => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}      => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}   => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}  => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}  => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}    => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}      => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE} => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE} => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE} => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}  => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}      => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}  => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE} => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}  => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444

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## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                     rhs               support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                     rhs               support   confidence
## [1] {eggs=TRUE,tail=FALSE}    => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}    => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catSize=FALSE}  => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                     rhs               support
## [1] {tail=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catSize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catSize=FALSE}    => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catSize=FALSE}     => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catSize=FALSE}     => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catSize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift

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## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}       => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}      => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}   => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs                                support  confidence lift
## [1] {aquatic=TRUE}      => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}      => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}         => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}     => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}     => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}          => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}         => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}           => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}          => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}           => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}     => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}     => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}       => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}     => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}        => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}      => {domestic=FALSE} 0.7029703 0.8554217 0.9817908

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## [17] {legs=TRUE}      => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}   => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}      => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}        => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}          => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}      => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                  => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                    => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}       => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                       => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}          => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}           => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}      => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}        => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}        => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}         => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}     => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}      => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}     => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}        => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                     => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}     => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}         => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}        => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.2079208

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## [32] {feathers=FALSE,eggs=TRUE}      => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}  => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}          => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}      => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}       => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}           => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                 => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                    => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}     => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                     => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                     => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                 => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701

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## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs          support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}     => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs          support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs          support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}  => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}  => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}   => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}       => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,toothed=TRUE}   => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE}  => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE}  => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}       => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}   => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232

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## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs                                support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}    => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}        => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs                                support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE}    => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE}    => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs                                support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}   => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE}   => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {domestic=TRUE}                  => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE}         => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE}     => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE}                   => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE}     => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE}        => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE}     => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE}         => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE}     => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE}        => {predator=FALSE} 0.1881188

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## [11] {breathes=TRUE,tail=FALSE}      => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE}    => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE}   => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE}        => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE}       => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE}        => {predator=FALSE} 0.2277228
## [17] {type=bird}                      => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE}                  => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE}    => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE}   => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE}   => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE}                  => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE}       => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE}   => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE}                  => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE}            => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE}      => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE}           => {predator=FALSE} 0.2871287
## [29] {milk=TRUE}                      => {predator=FALSE} 0.1881188
## [30] {type=mammal}                    => {predator=FALSE} 0.1881188
## [31] {tail=FALSE}                     => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE}                     => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE}                      => {predator=FALSE} 0.2574257
## [34] {milk=FALSE}                     => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE}                 => {predator=FALSE} 0.3366337
## [36] {hair=FALSE}                     => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE}                   => {predator=FALSE} 0.1584158
##      confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103

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## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616

##      lhs                      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}      => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}   => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}  => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}      => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}      => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}       => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}  => {predator=TRUE} 0.2673267 0.4153846 0.7491758

##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242

##      lhs                      rhs      support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}    => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910

##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145

##      lhs                      rhs      support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}     => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"

##      lhs                      rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000

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## [2] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catSize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catSize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catSize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catSize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catSize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catSize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE} => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE} => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE} => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE} => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838

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## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}           => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}       => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}           => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}        => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}          => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}           => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}          => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}          => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}           => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}       => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}       => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}        => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}       => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}       => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}           => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}      => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}            => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}        => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}       => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513

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## lift
## [1] 1.174419
## [2] 1.095661
## lhs rhs support confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
## lhs rhs support confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.371041
## lhs rhs support confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift

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## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}              => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}               => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}        => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}          => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}      => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                         => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}           => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                   => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}           => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}            => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}          => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}            => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}        => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}        => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}          => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}          => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}            => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}          => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}           => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}          => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}           => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}         => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}           => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}       => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}               => {legs=FALSE} 0.1782178 0.4285714

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## [28] {milk=FALSE,predator=TRUE}    => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}   => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}   => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}               => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756

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## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}  => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359

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##      lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}   => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}  => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs      rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514

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## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}     => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756

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## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}             => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}        => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}         => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}          => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}           => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}       => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}             => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                   => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}            => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}        => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}         => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}        => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}        => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}          => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}          => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}               => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}           => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}          => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}           => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}               => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}               => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}          => {fins=TRUE} 0.1287129 0.3250000

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## [35] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667

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## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}  => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}      => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}     => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619

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## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
## lhs rhs support confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054

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## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}      => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176

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##      lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}  => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs      rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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```

##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs      rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000

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## [6] {milk=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs          rhs          support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs          rhs          support  confidence
## [1] {type=fish}                  => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}   => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}   => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}     => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6500000

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## [17] {breathes=FALSE} => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807

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[4] 5.516807
[5] 5.281046
[6] 5.003096
[7] 5.003096
[8] 4.950980
[9] 4.827206
[10] 4.690402
[11] 4.391304
[12] 4.193772
[13] 3.960784
[14] 3.874680
[15] 3.861765
[16] 3.861765
[17] 3.677871
[18] 3.677871
[19] 3.656109
[20] 3.366667
[21] 3.366667
[22] 3.258065
[23] 2.970588
[24] 2.345201
[25] 2.227941
[26] 2.121849
[27] 2.087440
[28] 2.087440
[29] 2.032508
[30] 2.025401
[31] 1.980392
[32] 1.980392
[33] 1.930882
[34] 1.930882
[35] 1.838936
[36] 1.838936
[37] 1.828054
[38] 1.828054
[39] 1.815359
[40] 1.728342
[41] 1.711864
[42] 1.697479
[43] 1.667699
[44] 1.667699
[45] 1.643304
[46] 1.643304
[47] 1.603175
[48] 1.599548
[49] 1.576230
[50] 1.553846
[51] 1.540305
[52] 1.536511
[53] 1.425882
[54] 1.397924
[55] 1.383562
[56] 1.371041
[57] 1.371041

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## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}  => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}   => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}  => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548

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## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218

##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162

##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579

##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333

```

```

## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}    => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}     => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}     => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}  => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}  => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765

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```

## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091

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## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}    => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}=> {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs            rhs            support  confidence lift
## [1] {aquatic=TRUE}   => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}  => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}     => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}       => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}     => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}       => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}     => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}  => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}  => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}   => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}  => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}       => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}  => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}     => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}      => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}   => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs            rhs            support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}    => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}   => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE}=> {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs            rhs            support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs            rhs            support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215

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## [2] {type=mammal}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}     => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}   => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}        => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}       => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}    => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}        => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}        => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}         => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}    => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}   => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}     => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}    => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}        => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}    => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}    => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}    => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}     => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}        => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}       => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}    => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}     => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}       => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}   => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}       => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}   => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                          => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                        => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}              => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}               => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}              => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}               => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}                  => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}                => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}                => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}                => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}                => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}                => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}                => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}                => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}                => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}                => {toothed=FALSE} 0.1089109

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## [27] {aquatic=TRUE,fins=FALSE}      => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}        => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}     => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}       => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                  => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}               => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}    => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}=> {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}               => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192

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## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}      => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}     => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}     => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}  => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}      => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}  => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}   => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}    => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}  => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}  => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}  => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}     => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}      => {toothed=TRUE} 0.1980198 0.3389831 0.5612670

##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333

##      lhs                      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}    => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242

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## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
## lhs rhs support confidence
## [1] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
## lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
## lhs rhs support
## [1] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE} => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE} => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
## lhs rhs support confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE} => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568

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## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198

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## [23] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}   => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}     => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}        => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                 => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}        => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE}     => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE}    => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}   => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}   => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}    => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198

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## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                    => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                  => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                  => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793

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## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}  => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence

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## [1] {hair=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}       => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139 0.2295082
## lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
## lhs rhs support confidence
## [1] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198

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## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs      rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs      rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905

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## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163

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## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence lift
## [1] {milk=TRUE} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE} => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE} => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE} => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE} => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE} => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE} => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894

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## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}                 => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                 => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}                => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}              => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                   => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                  => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}              => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                   => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                   => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                   => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}               => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}              => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}                => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}              => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                   => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}              => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}              => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}              => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}              => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                   => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                  => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}              => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}              => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                  => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}             => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                  => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}            => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs      support
## [1] {type=fish}                   => {feathers=FALSE} 0.1287129
## [2] {fins=TRUE}                   => {feathers=FALSE} 0.1683168
## [3] {backbone=FALSE}              => {feathers=FALSE} 0.1782178
## [4] {breathes=FALSE}              => {feathers=FALSE} 0.2079208
## [5] {legs=FALSE}                  => {feathers=FALSE} 0.2277228
## [6] {tail=FALSE}                  => {feathers=FALSE} 0.2574257
## [7] {eggs=FALSE}                  => {feathers=FALSE} 0.4158416

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## [8] {hair=TRUE} => {feathers=FALSE} 0.4257426
## [9] {airborne=FALSE,catsize=FALSE} => {feathers=FALSE} 0.3465347
## [10] {airborne=FALSE,predator=FALSE} => {feathers=FALSE} 0.2673267
## [11] {airborne=FALSE} => {feathers=FALSE} 0.7227723
## [12] {catsize=TRUE} => {feathers=FALSE} 0.3762376
## [13] {predator=TRUE} => {feathers=FALSE} 0.4653465
## [14] {aquatic=TRUE} => {feathers=FALSE} 0.2970297
## [15] {aquatic=FALSE} => {feathers=FALSE} 0.5049505
## [16] {predator=FALSE} => {feathers=FALSE} 0.3366337
## [17] {catsize=FALSE} => {feathers=FALSE} 0.4257426
## [18] {breathes=TRUE} => {feathers=FALSE} 0.5940594
## [19] {legs=TRUE} => {feathers=FALSE} 0.5742574
## [20] {milk=FALSE} => {feathers=FALSE} 0.3960396
## [21] {eggs=TRUE} => {feathers=FALSE} 0.3861386
## [22] {hair=FALSE} => {feathers=FALSE} 0.3762376
## [23] {toothed=FALSE} => {feathers=FALSE} 0.1980198
## confidence lift
## [1] 1.0000000 1.2469136
## [2] 1.0000000 1.2469136
## [3] 1.0000000 1.2469136
## [4] 1.0000000 1.2469136
## [5] 1.0000000 1.2469136
## [6] 1.0000000 1.2469136
## [7] 1.0000000 1.2469136
## [8] 1.0000000 1.2469136
## [9] 0.9722222 1.2122771
## [10] 0.9642857 1.2023810
## [11] 0.9480519 1.1821388
## [12] 0.8636364 1.0768799
## [13] 0.8392857 1.0465168
## [14] 0.8333333 1.0390947
## [15] 0.7846154 0.9783476
## [16] 0.7555556 0.9421125
## [17] 0.7543860 0.9406541
## [18] 0.7500000 0.9351852
## [19] 0.7435897 0.9271921
## [20] 0.6666667 0.8312757
## [21] 0.6610169 0.8242310
## [22] 0.6551724 0.8169434
## [23] 0.5000000 0.6234568
## lhs rhs support confidence lift
## [1] {type=bird} => {feathers=TRUE} 0.1980198 1.0000000 5.0500000
## [2] {hair=FALSE} => {feathers=TRUE} 0.1980198 0.3448276 1.7413793
## [3] {aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.2153846 1.0876923
## [4] {venomous=FALSE} => {feathers=TRUE} 0.1980198 0.2150538 1.0860215
## [5] {domestic=FALSE} => {feathers=TRUE} 0.1683168 0.1931818 0.9755682
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158

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## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492

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## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}  => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}       => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}   => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}  => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}  => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}  => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}   => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339

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## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs      support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs      support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}   => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs      support
## [1] {legs=FALSE,catsize=FALSE}       => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}         => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                     rhs      support
## [1] {predator=TRUE,legs=FALSE}       => {breathes=FALSE} 0.1188119

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## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}        => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168
## confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}    => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}    => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}  => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}   => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}    => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}      => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}     => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}    => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}  => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}  => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}    => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918

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## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}              => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}         => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}           => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}           => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}          => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}             => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}          => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}          => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}     => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}       => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}          => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}              => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}          => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}          => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}           => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                       => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}           => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}          => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}          => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                   => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                     => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                   => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462

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## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413

##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}  => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}      => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}   => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}     => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}    => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}     => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}      => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE} => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}   => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}     => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}       => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}   => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}  => {tail=TRUE} 0.2277228 0.5750000 0.7743333

##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041

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##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}     => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}    => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}    => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}    => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}      => {tail=FALSE} 0.1584158 0.4000000

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## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence lift
## [1] {milk=TRUE} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE} => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE} => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE} => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE} => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE} => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE} => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE} => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE} => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE} => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE} => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE} => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE} => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE} => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE} => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE} => {venomous=FALSE} 0.5148515 0.8666667 0.9412186

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## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}            => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}          => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}                  => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}                  => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}                  => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}               => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}              => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}               => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}                  => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}            => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}             => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}            => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}                => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                          => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}               => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}                => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}                => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}            => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}                   => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}                 => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}                    => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}                => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}                => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}                => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}             => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}                    => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}                 => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}                   => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}                     => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}             => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}                  => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}                => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}                => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}             => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}                => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}                => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                               => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}                => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}                => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}                 => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}            => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}                => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}             => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}             => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}                 => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                           => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000

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## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}    => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}     => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114

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## [10] {domestic=TRUE}  => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}  => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}    => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}      => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE} => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE} => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE} => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE} => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}      => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}  => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE} => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}  => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs      support
## [1] {aquatic=FALSE,tail=FALSE}  => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs      support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}    => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251

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## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}  => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                rhs      support
## [1] {tail=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}     => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs      support
## [1] {toothed=FALSE,tail=FALSE}  => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000

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## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                          => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                      => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}           => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}            => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}             => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}            => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}             => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}            => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}                 => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}                 => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}                 => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}                => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}                 => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}                => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}              => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}             => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}                => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}                => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}             => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}            => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}            => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}             => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}            => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}             => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}              => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}                => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}             => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}            => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}               => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}              => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                           => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                           => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}          => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}            => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}          => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                       => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}            => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}        => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}            => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}             => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}             => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}         => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}         => {toothed=FALSE} 0.2871287

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## [49] {predator=TRUE}          => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}          => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}          => {toothed=TRUE} 0.1683168 1.0000000 1.6557377

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## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}     => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}      => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}   => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}    => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}  => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}     => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}      => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs          support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                      rhs          support
## [1] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}     => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188

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##      confidence lift
## [1] 0.8076923  2.039423
## [2] 0.8076923  2.039423
## [3] 0.7727273  1.951136
## [4] 0.5862069  1.480172
## [5] 0.5121951  1.293293
## [6] 0.5000000  1.262500
## [7] 0.4871795  1.230128
##      lhs                                rhs      support  confidence
## [1] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}     => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}    => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
##      lift

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## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE}    => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}    => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}       => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}           => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}           => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}          => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}           => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}         => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}    => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}   => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}      => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                  => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}       => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                      => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}       => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}         => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}        => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                     => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}         => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                       => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                    => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE}   => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                  => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}         => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}   => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}           => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}            => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}    => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}   => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}      => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}       => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}           => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                     => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}        => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}    => {aquatic=FALSE} 0.1485149

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## [45] {toothed=FALSE}	=> {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}	=> {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}	=> {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}	=> {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}	=> {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}	=> {aquatic=FALSE} 0.2871287
## confidence lift	
## [1] 1.0000000 1.5538462	
## [2] 1.0000000 1.5538462	
## [3] 1.0000000 1.5538462	
## [4] 1.0000000 1.5538462	
## [5] 1.0000000 1.5538462	
## [6] 1.0000000 1.5538462	
## [7] 1.0000000 1.5538462	
## [8] 1.0000000 1.5538462	
## [9] 0.9512195 1.4780488	
## [10] 0.9473684 1.4720648	
## [11] 0.9473684 1.4720648	
## [12] 0.9459459 1.4698545	
## [13] 0.9459459 1.4698545	
## [14] 0.9375000 1.4567308	
## [15] 0.9268293 1.4401501	
## [16] 0.9268293 1.4401501	
## [17] 0.9230769 1.4343195	
## [18] 0.9230769 1.4343195	
## [19] 0.9069767 1.4093023	
## [20] 0.8780488 1.3643527	
## [21] 0.8636364 1.3419580	
## [22] 0.8611111 1.3380342	
## [23] 0.8571429 1.3318681	
## [24] 0.8571429 1.3318681	
## [25] 0.8536585 1.3264540	
## [26] 0.8536585 1.3264540	
## [27] 0.8529412 1.3253394	
## [28] 0.8444444 1.3121368	
## [29] 0.8421053 1.3085020	
## [30] 0.8378378 1.3018711	
## [31] 0.8333333 1.2948718	
## [32] 0.8305085 1.2904824	
## [33] 0.8245614 1.2812416	
## [34] 0.8219178 1.2771338	
## [35] 0.8048780 1.2506567	
## [36] 0.8035714 1.2486264	
## [37] 0.8030303 1.2477855	
## [38] 0.7968750 1.2382212	
## [39] 0.7931034 1.2323607	
## [40] 0.7922078 1.2309690	
## [41] 0.7792208 1.2107892	
## [42] 0.7738095 1.2023810	
## [43] 0.6956522 1.0809365	
## [44] 0.6818182 1.0594406	
## [45] 0.6750000 1.0488462	
## [46] 0.6229508 0.9679697	
## [47] 0.6153846 0.9562130	

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## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}                 => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}            => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}                => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}              => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}                  => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}            => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}              => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}              => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111
##      lhs                      rhs          support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441
##      lhs                      rhs          support  confidence
## [1] {fins=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}        => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
##      lhs                      rhs          support  confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441
##      lhs                      rhs          support  confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}    => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}     => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872

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## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}        => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}          => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}     => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}        => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}     => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                  => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                    => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}        => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                       => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}         => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}          => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}       => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}       => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}       => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}        => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}     => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}     => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}    => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}       => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                    => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}        => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}       => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}       => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}        => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}    => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}            => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}        => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}         => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}        => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}             => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                   => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                      => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}       => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                       => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                       => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                   => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728

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## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758

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##	lhs	rhs	support	confidence	lift
## [1]	{domestic=TRUE}	=> {predator=FALSE}	0.1089109	0.8461538	1.8991453
## [2]	{airborne=TRUE}	=> {predator=FALSE}	0.1683168	0.7083333	1.5898148
## [3]	{type=bird}	=> {predator=FALSE}	0.1089109	0.5500000	1.2344444
## [4]	{feathers=TRUE}	=> {predator=FALSE}	0.1089109	0.5500000	1.2344444
## [5]	{toothed=FALSE}	=> {predator=FALSE}	0.2079208	0.5250000	1.1783333
## [6]	{catsize=FALSE}	=> {predator=FALSE}	0.2871287	0.5087719	1.1419103
## [7]	{milk=TRUE}	=> {predator=FALSE}	0.1881188	0.4634146	1.0401084
## [8]	{type=mammal}	=> {predator=FALSE}	0.1881188	0.4634146	1.0401084
## [9]	{tail=FALSE}	=> {predator=FALSE}	0.1188119	0.4615385	1.0358974
## [10]	{eggs=FALSE}	=> {predator=FALSE}	0.1881188	0.4523810	1.0153439
## [11]	{eggs=TRUE}	=> {predator=FALSE}	0.2574257	0.4406780	0.9890772
## [12]	{milk=FALSE}	=> {predator=FALSE}	0.2574257	0.4333333	0.9725926
## [13]	{domestic=FALSE}	=> {predator=FALSE}	0.3366337	0.3863636	0.8671717


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## [14] {hair=FALSE}      => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}     => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs                      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs                      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs                      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs                      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}    => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}     => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}          => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                      rhs                      support  confidence
## [1] {milk=FALSE,toothed=TRUE}      => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE}    => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE}     => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}          => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                      rhs                      support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}       => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}      => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE}  => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}    => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}     => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}       => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}        => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669

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## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                                rhs      support  confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE} => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE} => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE} => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish} => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE} => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE} => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908

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## [17] {legs=TRUE}      => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}   => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}      => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}    => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support  confidence
## [1] {type=fish}                => {tail=TRUE} 0.1287129 1.0000000
## [2] {type=bird}                  => {tail=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE}               => {tail=TRUE} 0.1980198 1.0000000
## [4] {backbone=TRUE,breathes=FALSE} => {tail=TRUE} 0.1386139 1.0000000
## [5] {airborne=TRUE,backbone=TRUE} => {tail=TRUE} 0.1782178 1.0000000
## [6] {toothed=FALSE,backbone=TRUE} => {tail=TRUE} 0.2178218 1.0000000
## [7] {backbone=TRUE,legs=FALSE}    => {tail=TRUE} 0.1782178 0.9473684
## [8] {fins=TRUE}                   => {tail=TRUE} 0.1584158 0.9411765
## [9] {predator=FALSE,catsize=TRUE} => {tail=TRUE} 0.1485149 0.9375000
## [10] {hair=FALSE,backbone=TRUE}    => {tail=TRUE} 0.4059406 0.9318182
## [11] {hair=FALSE,catsize=TRUE}     => {tail=TRUE} 0.1287129 0.9285714
## [12] {eggs=TRUE,backbone=TRUE}     => {tail=TRUE} 0.3861386 0.9285714
## [13] {milk=FALSE,backbone=TRUE}     => {tail=TRUE} 0.3861386 0.9285714
## [14] {eggs=TRUE,catsize=TRUE}       => {tail=TRUE} 0.1188119 0.9230769
## [15] {milk=FALSE,catsize=TRUE}      => {tail=TRUE} 0.1089109 0.9166667
## [16] {predator=FALSE,backbone=TRUE} => {tail=TRUE} 0.3267327 0.9166667
## [17] {aquatic=FALSE,backbone=TRUE} => {tail=TRUE} 0.4752475 0.9056604
## [18] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [19] {backbone=TRUE,catsize=FALSE} => {tail=TRUE} 0.3564356 0.9000000
## [20] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [21] {milk=TRUE,domestic=FALSE}     => {tail=TRUE} 0.2871287 0.8787879
## [22] {domestic=FALSE,type=mammal}   => {tail=TRUE} 0.2871287 0.8787879
## [23] {predator=FALSE,toothed=TRUE}  => {tail=TRUE} 0.2079208 0.8750000
## [24] {hair=FALSE,toothed=TRUE}      => {tail=TRUE} 0.1980198 0.8695652
## [25] {domestic=FALSE,catsize=TRUE}  => {tail=TRUE} 0.3267327 0.8684211
## [26] {aquatic=FALSE,toothed=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [27] {toothed=TRUE,domestic=FALSE}  => {tail=TRUE} 0.4455446 0.8653846
## [28] {catsize=TRUE}                  => {tail=TRUE} 0.3762376 0.8636364
## [29] {toothed=TRUE,venomous=FALSE}  => {tail=TRUE} 0.4851485 0.8596491
## [30] {eggs=FALSE}                   => {tail=TRUE} 0.3564356 0.8571429
## [31] {milk=FALSE,toothed=TRUE}      => {tail=TRUE} 0.1782178 0.8571429

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## [32] {milk=TRUE} => {tail=TRUE} 0.3465347 0.8536585
## [33] {type=mammal} => {tail=TRUE} 0.3465347 0.8536585
## [34] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [35] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [36] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [37] {hair=TRUE,predator=TRUE} => {tail=TRUE} 0.1584158 0.8000000
## [38] {hair=TRUE,domestic=FALSE} => {tail=TRUE} 0.2673267 0.7941176
## [39] {venomous=FALSE,legs=FALSE} => {tail=TRUE} 0.1485149 0.7894737
## [40] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
## [41] {legs=FALSE} => {tail=TRUE} 0.1782178 0.7826087
## [42] {airborne=FALSE,aquatic=FALSE} => {tail=TRUE} 0.3564356 0.7826087
## [43] {airborne=FALSE,breathes=TRUE} => {tail=TRUE} 0.4257426 0.7678571
## [44] {hair=TRUE} => {tail=TRUE} 0.3267327 0.7674419
## [45] {breathes=TRUE,domestic=FALSE} => {tail=TRUE} 0.5148515 0.7647059
## [46] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
## [47] {aquatic=FALSE} => {tail=TRUE} 0.4851485 0.7538462
## [48] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000
## [49] {predator=TRUE} => {tail=TRUE} 0.4158416 0.7500000
## [50] {airborne=FALSE,predator=FALSE} => {tail=TRUE} 0.2079208 0.7500000
## [51] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364
## [52] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333
## [53] {hair=FALSE} => {tail=TRUE} 0.4158416 0.7241379
## [54] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123
## [55] {eggs=TRUE} => {tail=TRUE} 0.3861386 0.6610169
## [56] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228
## [57] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000
## lift
## [1] 1.3466667
## [2] 1.3466667
## [3] 1.3466667
## [4] 1.3466667
## [5] 1.3466667
## [6] 1.3466667
## [7] 1.2757895
## [8] 1.2674510
## [9] 1.2625000
## [10] 1.2548485
## [11] 1.2504762
## [12] 1.2504762
## [13] 1.2504762
## [14] 1.2430769
## [15] 1.2344444
## [16] 1.2344444
## [17] 1.2196226
## [18] 1.2138967
## [19] 1.2120000
## [20] 1.1882353
## [21] 1.1834343
## [22] 1.1834343
## [23] 1.1783333
## [24] 1.1710145
## [25] 1.1694737
## [26] 1.1694737
## [27] 1.1653846

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## [28] 1.1630303
## [29] 1.1576608
## [30] 1.1542857
## [31] 1.1542857
## [32] 1.1495935
## [33] 1.1495935
## [34] 1.1049573
## [35] 1.1018182
## [36] 1.0972840
## [37] 1.0773333
## [38] 1.0694118
## [39] 1.0631579
## [40] 1.0593778
## [41] 1.0539130
## [42] 1.0539130
## [43] 1.0340476
## [44] 1.0334884
## [45] 1.0298039
## [46] 1.0163522
## [47] 1.0151795
## [48] 1.0100000
## [49] 1.0100000
## [50] 1.0100000
## [51] 0.9946970
## [52] 0.9875556
## [53] 0.9751724
## [54] 0.9144033
## [55] 0.8901695
## [56] 0.8741520
## [57] 0.7743333
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444 3.6688034
## [2] {fins=FALSE}      => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [3] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [4] {predator=TRUE}   => {tail=FALSE} 0.1386139 0.2500000 0.9711538
## [5] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591 0.9189413
##      lhs                rhs      support  confidence
## [1] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [2] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [3] {milk=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2871287 0.8787879
## [4] {domestic=FALSE,type=mammal}    => {tail=TRUE} 0.2871287 0.8787879
## [5] {domestic=FALSE,catsize=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [6] {toothed=TRUE,domestic=FALSE}    => {tail=TRUE} 0.4455446 0.8653846
## [7] {hair=TRUE,domestic=FALSE}       => {tail=TRUE} 0.2673267 0.7941176
## [8] {breathes=TRUE,domestic=FALSE}   => {tail=TRUE} 0.5148515 0.7647059
## [9] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
##      lift
## [1] 1.213897
## [2] 1.188235
## [3] 1.183434
## [4] 1.183434
## [5] 1.169474
## [6] 1.165385
## [7] 1.069412

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## [8] 1.029804
## [9] 1.016352
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [2] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [3] {hair=TRUE,predator=TRUE}      => {tail=TRUE} 0.1584158 0.8000000
##      lift
## [1] 1.104957
## [2] 1.097284
## [3] 1.077333
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [2] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [3] {venomous=FALSE,legs=FALSE}    => {tail=TRUE} 0.1485149 0.7894737
## [4] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
##      lift
## [1] 1.157661
## [2] 1.101818
## [3] 1.063158
## [4] 1.059378
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}     => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}    => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}       => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}      => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}  => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}       => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}       => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}   => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}   => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}     => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}    => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}        => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}   => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}   => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}   => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}    => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}        => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}       => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}    => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}    => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}       => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}   => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}       => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}   => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}      => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}       => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE} => {aquatic=TRUE} 0.1386139

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## [4] {backbone=TRUE,breathes=FALSE} => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE} => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE} => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE} => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE} => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE} => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE} => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE} => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catSize=FALSE} => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE} => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catSize=FALSE} => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catSize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catSize=FALSE} => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catSize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catSize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catSize=FALSE} => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE} => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE} => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE} => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE} => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE} => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619

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## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111

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	lhs	rhs	support	confidence	lift
## [1]	{domestic=TRUE}	=> {aquatic=FALSE}	0.1188119	0.9230769	1.4343195
## [2]	{hair=TRUE}	=> {aquatic=FALSE}	0.3861386	0.9069767	1.4093023
## [3]	{eggs=FALSE}	=> {aquatic=FALSE}	0.3564356	0.8571429	1.3318681
## [4]	{milk=TRUE}	=> {aquatic=FALSE}	0.3465347	0.8536585	1.3264540
## [5]	{type=mammal}	=> {aquatic=FALSE}	0.3465347	0.8536585	1.3264540
## [6]	{predator=FALSE}	=> {aquatic=FALSE}	0.3762376	0.8444444	1.3121368
## [7]	{fins=FALSE}	=> {aquatic=FALSE}	0.6435644	0.7738095	1.2023810
## [8]	{toothed=FALSE}	=> {aquatic=FALSE}	0.2673267	0.6750000	1.0488462
## [9]	{toothed=TRUE}	=> {aquatic=FALSE}	0.3762376	0.6229508	0.9679697
## [10]	{tail=FALSE}	=> {aquatic=FALSE}	0.1584158	0.6153846	0.9562130
## [11]	{domestic=FALSE}	=> {aquatic=FALSE}	0.5247525	0.6022727	0.9358392
## [12]	{catsize=FALSE}	=> {aquatic=FALSE}	0.3366337	0.5964912	0.9268556
## [13]	{eggs=TRUE}	=> {aquatic=FALSE}	0.2871287	0.4915254	0.7637549


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##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}       => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}   => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}        => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000

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## [2] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE} => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE} => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {milk=FALSE} 0.1287129 1.0000000
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000
## [3] {type=bird} => {milk=FALSE} 0.1980198 1.0000000
## [4] {feathers=TRUE} => {milk=FALSE} 0.1980198 1.0000000
## [5] {breathes=FALSE} => {milk=FALSE} 0.2079208 1.0000000
## [6] {legs=FALSE,catsize=FALSE} => {milk=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE} => {milk=FALSE} 0.1881188 1.0000000
## [8] {hair=FALSE,airborne=TRUE} => {milk=FALSE} 0.1782178 1.0000000
## [9] {hair=FALSE,tail=FALSE} => {milk=FALSE} 0.1584158 1.0000000
## [10] {aquatic=TRUE,catsize=FALSE} => {milk=FALSE} 0.2277228 1.0000000
## [11] {toothed=FALSE,catsize=FALSE} => {milk=FALSE} 0.3069307 1.0000000
## [12] {hair=FALSE,toothed=FALSE} => {milk=FALSE} 0.3465347 1.0000000
## [13] {hair=FALSE,predator=FALSE} => {milk=FALSE} 0.2178218 1.0000000
## [14] {hair=FALSE,catsize=FALSE} => {milk=FALSE} 0.4356436 1.0000000
## [15] {eggs=TRUE,catsize=FALSE} => {milk=FALSE} 0.4554455 1.0000000
## [16] {hair=FALSE,eggs=TRUE} => {milk=FALSE} 0.5346535 1.0000000
## [17] {hair=FALSE,aquatic=FALSE} => {milk=FALSE} 0.2574257 1.0000000
## [18] {hair=FALSE,legs=TRUE} => {milk=FALSE} 0.3564356 1.0000000
## [19] {hair=FALSE,fins=FALSE} => {milk=FALSE} 0.4257426 1.0000000
## [20] {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1.0000000
## [21] {eggs=TRUE,aquatic=FALSE} => {milk=FALSE} 0.2871287 1.0000000
## [22] {eggs=TRUE} => {milk=FALSE} 0.5742574 0.9830508
## [23] {hair=FALSE} => {milk=FALSE} 0.5544554 0.9655172
## [24] {predator=TRUE,catsize=FALSE} => {milk=FALSE} 0.2574257 0.9285714
## [25] {airborne=TRUE} => {milk=FALSE} 0.2178218 0.9166667
## [26] {aquatic=TRUE,fins=FALSE} => {milk=FALSE} 0.1683168 0.8947368
## [27] {legs=FALSE} => {milk=FALSE} 0.1980198 0.8695652
## [28] {domestic=FALSE,catsize=FALSE} => {milk=FALSE} 0.4257426 0.8600000
## [29] {aquatic=TRUE} => {milk=FALSE} 0.2970297 0.8333333
## [30] {tail=FALSE,domestic=FALSE} => {milk=FALSE} 0.1881188 0.8260870
## [31] {tail=FALSE} => {milk=FALSE} 0.1980198 0.7692308
## [32] {fins=TRUE} => {milk=FALSE} 0.1287129 0.7647059
## [33] {predator=TRUE} => {milk=FALSE} 0.3366337 0.6071429
## [34] {fins=FALSE} => {milk=FALSE} 0.4653465 0.5595238
## [35] {tail=TRUE} => {milk=FALSE} 0.3960396 0.5333333
## [36] {backbone=TRUE} => {milk=FALSE} 0.4158416 0.5060241
## [37] {aquatic=FALSE} => {milk=FALSE} 0.2970297 0.4615385
## [38] {toothed=TRUE} => {milk=FALSE} 0.2079208 0.3442623

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##      lift
## [1] 1.6833333
## [2] 1.6833333
## [3] 1.6833333
## [4] 1.6833333
## [5] 1.6833333
## [6] 1.6833333
## [7] 1.6833333
## [8] 1.6833333
## [9] 1.6833333
## [10] 1.6833333
## [11] 1.6833333
## [12] 1.6833333
## [13] 1.6833333
## [14] 1.6833333
## [15] 1.6833333
## [16] 1.6833333
## [17] 1.6833333
## [18] 1.6833333
## [19] 1.6833333
## [20] 1.6833333
## [21] 1.6833333
## [22] 1.6548023
## [23] 1.6252874
## [24] 1.5630952
## [25] 1.5430556
## [26] 1.5061404
## [27] 1.4637681
## [28] 1.4476667
## [29] 1.4027778
## [30] 1.3905797
## [31] 1.2948718
## [32] 1.2872549
## [33] 1.0220238
## [34] 0.9418651
## [35] 0.8977778
## [36] 0.8518072
## [37] 0.7769231
## [38] 0.5795082
##      lhs      rhs      support      confidence lift
## [1] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377 1.615354
## [2] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728 1.246914
## [3] {predator=TRUE} => {milk=TRUE} 0.2178218 0.3928571 0.967770
##      lhs      rhs      support      confidence lift
## [1] {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1 1.683333
##      lhs      rhs      support      confidence
## [1] {predator=TRUE,catsize=FALSE} => {milk=FALSE} 0.2574257 0.9285714
##      lift
## [1] 1.563095
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109

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## [4] {milk=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal}    => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE}     => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE}      => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE}       => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE}         => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE}          => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal}        => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE}   => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE}                 => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE}                     => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE}      => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE}       => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE}       => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE}                    => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE}        => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE}                     => {aquatic=FALSE} 0.3465347
## [26] {type=mammal}                   => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE}                => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE}        => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE}          => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE}           => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE}      => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE}     => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE}          => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE}                    => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE}       => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE}   => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE}                 => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE}                  => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE}                    => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE}                => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE}                 => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE}                     => {aquatic=FALSE} 0.2871287
## confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462

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## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}     => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE} => {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}    => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}  => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}      => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE} => {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}  => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}  => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111

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##      lhs                                rhs                support  confidence
## [1] {backbone=TRUE,fins=FALSE}    => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441
##      lhs                                rhs                support  confidence
## [1] {fins=FALSE,tail=TRUE}        => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}         => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE}     => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
##      lhs                                rhs                support  confidence
## [1] {venomous=FALSE,fins=FALSE}   => {aquatic=FALSE} 0.6039604 0.7922078
##      lift
## [1] 1.230969
##      lhs                                rhs                support  confidence
## [1] {toothed=FALSE,tail=TRUE}      => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE}  => {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.080936
## [2] 1.059441
##      lhs                                rhs                support  confidence
## [1] {breathes=TRUE,domestic=TRUE}  => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE}     => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE}      => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE}  => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE}       => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE}   => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
##      lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support  confidence
## [1] {aquatic=FALSE,backbone=TRUE}  => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}       => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}       => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}      => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}   => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846

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## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs                      rhs          support  confidence lift
## [1] {aquatic=TRUE}    => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}   => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}      => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE}  => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE}  => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}         => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}       => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}         => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}        => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}         => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}   => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}    => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}   => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}     => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}    => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}         => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}     => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}        => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}         => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}     => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                      rhs          support  confidence
## [1] {aquatic=FALSE,legs=TRUE}    => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE}     => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=fish}                  => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                   => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}    => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE} => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}               => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}     => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}       => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}    => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}   => {aquatic=TRUE} 0.1485149

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## [12] {legs=FALSE} => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE} => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE} => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE} => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE} => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE} => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE} => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE} => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE} => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE} => {aquatic=TRUE} 0.1584158
## confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758

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## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111

##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}    => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549

##      lhs      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}  => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}   => {aquatic=TRUE} 0.1683168 0.8500000

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## [4] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
## lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966
## lhs rhs support confidence
## [1] {hair=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
## lhs rhs support confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1485149 0.4054054
## lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE} => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE} => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE} => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE} => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE} => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## lift
## [1] 2.384722

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## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                        => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}            => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}            => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}            => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}                => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}           => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}            => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}           => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}            => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}             => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}          => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}              => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                      => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}              => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}              => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}          => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}           => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}          => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}          => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}            => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}            => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}                => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}             => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}            => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}            => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}                 => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}             => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}            => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}              => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}             => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}          => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}             => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}          => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}              => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}          => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}          => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}          => {fins=TRUE} 0.1287129 0.2765957

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## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882

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## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}  => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}       => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}        => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}    => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}   => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}     => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}   => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}     => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730

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## [21] {eggs=TRUE}      => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}  => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}    => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}  => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}   => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}        => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}        => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}         => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1683168 0.5666667

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## [4] {hair=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1485149 0.2307692

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## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857

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##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE}    => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}         => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE}  => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765

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## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699

##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000

##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588

## [1] "Número de reglas con consecuente negado"

##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}          => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}         => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}        => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}      => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}           => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}          => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}       => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}           => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}           => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}            => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}       => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}       => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}        => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}           => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}       => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}       => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}       => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}        => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}            => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}           => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}        => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}        => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}           => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}       => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}           => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}      => {venomous=FALSE} 0.1386139 0.7777778 0.8446834

## [1] "Número de reglas con consecuente negado"

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##	lhs	rhs	support	confidence
## [1]	{type=fish}	=> {fins=TRUE}	0.1287129	1.0000000
## [2]	{toothed=TRUE,breathes=FALSE}	=> {fins=TRUE}	0.1287129	0.9285714
## [3]	{breathes=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1287129	0.9285714
## [4]	{backbone=TRUE,breathes=FALSE}	=> {fins=TRUE}	0.1287129	0.9285714
## [5]	{aquatic=TRUE,legs=FALSE}	=> {fins=TRUE}	0.1584158	0.8888889
## [6]	{toothed=TRUE,legs=FALSE}	=> {fins=TRUE}	0.1584158	0.8421053
## [7]	{backbone=TRUE,legs=FALSE}	=> {fins=TRUE}	0.1584158	0.8421053
## [8]	{legs=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1485149	0.8333333
## [9]	{breathes=FALSE,legs=FALSE}	=> {fins=TRUE}	0.1287129	0.8125000
## [10]	{venomous=FALSE,legs=FALSE}	=> {fins=TRUE}	0.1485149	0.7894737
## [11]	{aquatic=TRUE,toothed=TRUE}	=> {fins=TRUE}	0.1683168	0.7391304
## [12]	{predator=TRUE,legs=FALSE}	=> {fins=TRUE}	0.1188119	0.7058824
## [13]	{breathes=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.6666667
## [14]	{hair=FALSE,toothed=TRUE}	=> {fins=TRUE}	0.1485149	0.6521739
## [15]	{aquatic=TRUE,breathes=FALSE}	=> {fins=TRUE}	0.1287129	0.6500000
## [16]	{eggs=TRUE,toothed=TRUE}	=> {fins=TRUE}	0.1287129	0.6500000
## [17]	{breathes=FALSE}	=> {fins=TRUE}	0.1287129	0.6190476
## [18]	{milk=FALSE,toothed=TRUE}	=> {fins=TRUE}	0.1287129	0.6190476
## [19]	{aquatic=TRUE,tail=TRUE}	=> {fins=TRUE}	0.1584158	0.6153846
## [20]	{feathers=FALSE,aquatic=TRUE}	=> {fins=TRUE}	0.1683168	0.5666667
## [21]	{aquatic=TRUE,backbone=TRUE}	=> {fins=TRUE}	0.1683168	0.5666667
## [22]	{airborne=FALSE,aquatic=TRUE}	=> {fins=TRUE}	0.1683168	0.5483871
## [23]	{aquatic=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.5000000
## [24]	{hair=FALSE,feathers=FALSE}	=> {fins=TRUE}	0.1485149	0.3947368
## [25]	{hair=FALSE,airborne=FALSE}	=> {fins=TRUE}	0.1485149	0.3750000
## [26]	{hair=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1485149	0.3571429
## [27]	{predator=TRUE,toothed=TRUE}	=> {fins=TRUE}	0.1287129	0.3513514
## [28]	{eggs=TRUE,airborne=FALSE}	=> {fins=TRUE}	0.1287129	0.3513514
## [29]	{milk=FALSE,airborne=FALSE}	=> {fins=TRUE}	0.1287129	0.3421053
## [30]	{hair=FALSE,backbone=TRUE}	=> {fins=TRUE}	0.1485149	0.3409091
## [31]	{eggs=TRUE,tail=TRUE}	=> {fins=TRUE}	0.1287129	0.3333333
## [32]	{feathers=FALSE,eggs=TRUE}	=> {fins=TRUE}	0.1287129	0.3333333
## [33]	{milk=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1287129	0.3250000
## [34]	{feathers=FALSE,milk=FALSE}	=> {fins=TRUE}	0.1287129	0.3250000
## [35]	{eggs=TRUE,backbone=TRUE}	=> {fins=TRUE}	0.1287129	0.3095238
## [36]	{milk=FALSE,backbone=TRUE}	=> {fins=TRUE}	0.1287129	0.3095238
## [37]	{toothed=TRUE,tail=TRUE}	=> {fins=TRUE}	0.1584158	0.3076923
## [38]	{toothed=TRUE,domestic=FALSE}	=> {fins=TRUE}	0.1584158	0.3076923
## [39]	{hair=FALSE,predator=TRUE}	=> {fins=TRUE}	0.1089109	0.3055556
## [40]	{feathers=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1584158	0.2909091
## [41]	{airborne=FALSE,toothed=TRUE}	=> {fins=TRUE}	0.1683168	0.2881356
## [42]	{predator=TRUE,tail=TRUE}	=> {fins=TRUE}	0.1188119	0.2857143
## [43]	{toothed=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1584158	0.2807018
## [44]	{airborne=FALSE,tail=TRUE}	=> {fins=TRUE}	0.1584158	0.2807018
## [45]	{feathers=FALSE,predator=TRUE}	=> {fins=TRUE}	0.1287129	0.2765957
## [46]	{predator=TRUE,backbone=TRUE}	=> {fins=TRUE}	0.1287129	0.2765957
## [47]	{feathers=FALSE,backbone=TRUE}	=> {fins=TRUE}	0.1683168	0.2698413
## [48]	{hair=FALSE,venomous=FALSE}	=> {fins=TRUE}	0.1386139	0.2692308
## [49]	{airborne=FALSE,predator=TRUE}	=> {fins=TRUE}	0.1287129	0.2653061
## [50]	{airborne=FALSE,backbone=TRUE}	=> {fins=TRUE}	0.1683168	0.2615385
## [51]	{hair=FALSE,domestic=FALSE}	=> {fins=TRUE}	0.1386139	0.2592593
## [52]	{hair=FALSE}	=> {fins=TRUE}	0.1485149	0.2586207
## [53]	{predator=TRUE,venomous=FALSE}	=> {fins=TRUE}	0.1188119	0.2400000

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## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342

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## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}  => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}       => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}  => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}  => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}     => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}  => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}   => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}   => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}  => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}      => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence

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## [1] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs      rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392

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## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957

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## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence

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## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE} => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE} => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE} => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE} => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE} => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE} => {backbone=FALSE} 0.1089109

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## [36] {eggs=TRUE,domestic=FALSE}      => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                      => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}     => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}  => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}      => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                 => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846

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## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs          support  confidence lift
## [1] {type=fish}                => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}                 => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}                 => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}             => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}                  => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}                => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}              => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}                  => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}              => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}             => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}             => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}                => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}                  => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}            => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}            => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}            => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}             => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}                  => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}             => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}            => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}            => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs          support
## [1] {aquatic=FALSE,tail=FALSE}  => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}     => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                      rhs          support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178

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## [2] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}       => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}  => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}  => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}  => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392

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## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence
## [1] {type=fish}                        => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}          => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}        => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}             => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}        => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}       => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}        => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}         => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}           => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                   => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}          => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}           => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}      => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}      => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}        => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}        => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}             => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}         => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}        => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}         => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}              => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}             => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}        => {fins=TRUE} 0.1287129 0.3250000

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## [35] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667

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## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}  => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}      => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619

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## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
## lhs rhs support confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054

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## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}    => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}  => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176

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##      lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}   => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}  => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs      rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000

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## [6] {milk=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}=> {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}=> {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs          rhs          support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}=> {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs          rhs          support
## [1] {type=bird}      => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}=> {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}     => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}    => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}=> {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198

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## [17] {hair=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}       => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}            => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}       => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}       => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}           => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}       => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}       => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}          => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}      => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}          => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}           => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                   => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}          => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE}     => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE}  => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139

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## [71] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}         => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                   => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                   => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                   => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604

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## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE}  => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}       => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}        => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}  => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}  => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}  => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852

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## [17] {legs=TRUE}      => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}     => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}      => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}        => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}       => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}         => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}         => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}           => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390

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## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                                support    confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs                                support    confidence

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## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286

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## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE}=> {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}=> {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}=> {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {hair=TRUE,eggs=FALSE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}    => {milk=TRUE} 0.2970297 1.0000000

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## [6] {hair=TRUE,predator=TRUE}      => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}        => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}      => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}       => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}      => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}     => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}         => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}      => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}      => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}    => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}       => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}        => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}   => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}   => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE}  => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}      => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                 => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE}  => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}   => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}   => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}     => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE}  => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}   => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958

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## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE} => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961

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## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE} => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}   => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}  => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}        => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}      => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}   => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}       => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}    => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}     => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}       => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}   => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}      => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}       => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}   => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}   => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}    => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence

```

```

## [1] {hair=TRUE,predator=TRUE}      => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
## lhs rhs support confidence
## [1] {toothed=TRUE,fins=FALSE}      => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}      => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}          => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE}          => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE}      => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE}      => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE}      => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE}   => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE}   => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE}    => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE}        => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE}       => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778

```



```

## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"

```

##	lhs	rhs	support	confidence	lift
## [1]	{milk=TRUE}	=> {venomous=FALSE}	0.4059406	1.0000000	1.0860215
## [2]	{type=mammal}	=> {venomous=FALSE}	0.4059406	1.0000000	1.0860215
## [3]	{catsize=TRUE}	=> {venomous=FALSE}	0.4257426	0.9772727	1.0613392
## [4]	{predator=FALSE}	=> {venomous=FALSE}	0.4257426	0.9555556	1.0377539
## [5]	{hair=TRUE}	=> {venomous=FALSE}	0.4059406	0.9534884	1.0355089
## [6]	{eggs=FALSE}	=> {venomous=FALSE}	0.3960396	0.9523810	1.0343062
## [7]	{backbone=TRUE}	=> {venomous=FALSE}	0.7821782	0.9518072	1.0336831
## [8]	{legs=TRUE}	=> {venomous=FALSE}	0.7326733	0.9487179	1.0303281
## [9]	{tail=TRUE}	=> {venomous=FALSE}	0.7029703	0.9466667	1.0281004
## [10]	{fins=TRUE}	=> {venomous=FALSE}	0.1584158	0.9411765	1.0221379
## [11]	{aquatic=FALSE}	=> {venomous=FALSE}	0.6039604	0.9384615	1.0191894
## [12]	{breathes=TRUE}	=> {venomous=FALSE}	0.7425743	0.9375000	1.0181452
## [13]	{toothed=TRUE}	=> {venomous=FALSE}	0.5643564	0.9344262	1.0148070
## [14]	{domestic=TRUE}	=> {venomous=FALSE}	0.1188119	0.9230769	1.0024814
## [15]	{type=fish}	=> {venomous=FALSE}	0.1188119	0.9230769	1.0024814
## [16]	{airborne=FALSE}	=> {venomous=FALSE}	0.7029703	0.9220779	1.0013965
## [17]	{domestic=FALSE}	=> {venomous=FALSE}	0.8019802	0.9204545	0.9996334
## [18]	{feathers=FALSE}	=> {venomous=FALSE}	0.7227723	0.9012346	0.9787601
## [19]	{toothed=FALSE}	=> {venomous=FALSE}	0.3564356	0.9000000	0.9774194
## [20]	{eggs=TRUE}	=> {venomous=FALSE}	0.5247525	0.8983051	0.9755786
## [21]	{hair=FALSE}	=> {venomous=FALSE}	0.5148515	0.8965517	0.9736745
## [22]	{predator=TRUE}	=> {venomous=FALSE}	0.4950495	0.8928571	0.9696621
## [23]	{catsize=FALSE}	=> {venomous=FALSE}	0.4950495	0.8771930	0.9526504
## [24]	{milk=FALSE}	=> {venomous=FALSE}	0.5148515	0.8666667	0.9412186
## [25]	{breathes=FALSE}	=> {venomous=FALSE}	0.1782178	0.8571429	0.9308756
## [26]	{legs=FALSE}	=> {venomous=FALSE}	0.1881188	0.8260870	0.8971482
## [27]	{backbone=FALSE}	=> {venomous=FALSE}	0.1386139	0.7777778	0.8446834
## [1]	"Número de reglas con consecuente negado"				
##	lhs	rhs	support		
## [1]	{type=bird}	=> {feathers=TRUE}	0.1980198		
## [2]	{toothed=FALSE,backbone=TRUE}	=> {feathers=TRUE}	0.1980198		
## [3]	{hair=FALSE,airborne=TRUE}	=> {feathers=TRUE}	0.1584158		
## [4]	{airborne=TRUE,tail=TRUE}	=> {feathers=TRUE}	0.1584158		
## [5]	{airborne=TRUE,backbone=TRUE}	=> {feathers=TRUE}	0.1584158		
## [6]	{toothed=FALSE,tail=TRUE}	=> {feathers=TRUE}	0.1980198		
## [7]	{airborne=TRUE,toothed=FALSE}	=> {feathers=TRUE}	0.1584158		
## [8]	{eggs=TRUE,airborne=TRUE}	=> {feathers=TRUE}	0.1584158		
## [9]	{milk=FALSE,airborne=TRUE}	=> {feathers=TRUE}	0.1584158		
## [10]	{airborne=TRUE,venomous=FALSE}	=> {feathers=TRUE}	0.1584158		
## [11]	{toothed=FALSE,breathes=TRUE}	=> {feathers=TRUE}	0.1980198		
## [12]	{hair=FALSE,toothed=FALSE}	=> {feathers=TRUE}	0.1980198		
## [13]	{toothed=FALSE,legs=TRUE}	=> {feathers=TRUE}	0.1980198		
## [14]	{toothed=FALSE,venomous=FALSE}	=> {feathers=TRUE}	0.1980198		
## [15]	{hair=FALSE,legs=TRUE}	=> {feathers=TRUE}	0.1980198		
## [16]	{hair=FALSE,breathes=TRUE}	=> {feathers=TRUE}	0.1980198		
## [17]	{hair=FALSE,aquatic=FALSE}	=> {feathers=TRUE}	0.1386139		
## [18]	{predator=FALSE,toothed=FALSE}	=> {feathers=TRUE}	0.1089109		
## [19]	{aquatic=FALSE,toothed=FALSE}	=> {feathers=TRUE}	0.1386139		
## [20]	{eggs=TRUE,toothed=FALSE}	=> {feathers=TRUE}	0.1980198		
## [21]	{milk=FALSE,toothed=FALSE}	=> {feathers=TRUE}	0.1980198		
## [22]	{eggs=TRUE,tail=TRUE}	=> {feathers=TRUE}	0.1980198		
## [23]	{eggs=TRUE,breathes=TRUE}	=> {feathers=TRUE}	0.1980198		
## [24]	{milk=FALSE,breathes=TRUE}	=> {feathers=TRUE}	0.1980198		

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## [25] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}   => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}     => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}        => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                 => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}        => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE}     => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE}    => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}   => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}   => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}    => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}              => {feathers=TRUE} 0.1386139

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## [79] {venomous=FALSE}          => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}          => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902

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## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}  => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}   => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}  => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}  => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185

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## [3] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
## lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
## lhs rhs support confidence
## [1] {tail=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}       => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}  => {feathers=TRUE} 0.1386139 0.2800000
## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198

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## [5] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs          support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs          support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319

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## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154

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## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}    => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}     => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}        => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}   => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}   => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667

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## [14] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                   => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift

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[1] 5.941176
[2] 5.516807
[3] 5.516807
[4] 5.516807
[5] 5.281046
[6] 5.003096
[7] 5.003096
[8] 4.950980
[9] 4.827206
[10] 4.690402
[11] 4.391304
[12] 4.193772
[13] 3.960784
[14] 3.874680
[15] 3.861765
[16] 3.861765
[17] 3.677871
[18] 3.677871
[19] 3.656109
[20] 3.366667
[21] 3.366667
[22] 3.258065
[23] 2.970588
[24] 2.345201
[25] 2.227941
[26] 2.121849
[27] 2.087440
[28] 2.087440
[29] 2.032508
[30] 2.025401
[31] 1.980392
[32] 1.980392
[33] 1.930882
[34] 1.930882
[35] 1.838936
[36] 1.838936
[37] 1.828054
[38] 1.828054
[39] 1.815359
[40] 1.728342
[41] 1.711864
[42] 1.697479
[43] 1.667699
[44] 1.667699
[45] 1.643304
[46] 1.643304
[47] 1.603175
[48] 1.599548
[49] 1.576230
[50] 1.553846
[51] 1.540305
[52] 1.536511
[53] 1.425882
[54] 1.397924

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## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}  => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}   => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}  => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784

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## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence

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## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs rhs support confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
## lhs rhs support confidence
## [1] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151

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## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368

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## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}  => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}  => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667

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## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}        => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}       => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}              => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}              => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}             => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}            => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}             => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}            => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}             => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE}        => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}              => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}          => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}               => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                      => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}              => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}           => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}            => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}           => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}          => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}            => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}            => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}                 => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}            => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}             => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}            => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}             => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}                  => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}             => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}                  => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}            => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}              => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}             => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}               => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}           => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}             => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}          => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}              => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}          => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}             => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}          => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}          => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}         => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}            => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}         => {fins=TRUE} 0.1287129 0.2653061

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## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936

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## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}   => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}   => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}    => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}    => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}    => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}  => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}       => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}   => {fins=FALSE} 0.4257426 0.7678571 0.9232568

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## [24] {hair=FALSE}      => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}     => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}     => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
##      lhs                      rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238

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## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
## lhs rhs support confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
## lhs rhs support confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807

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## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514

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## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs      rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054

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## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}=> {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE}=> {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                        => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                        => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}        => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                  => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}        => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}         => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}         => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}          => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}       => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                     => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}         => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}        => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}         => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}         => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}        => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}        => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}         => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}        => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}         => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}      => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}        => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}          => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}         => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}              => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}         => {aquatic=TRUE} 0.2871287

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## [32] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}         => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE}=> {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE}=> {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                    => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}               => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641

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## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111

##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}     => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549

##      lhs      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}       => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,domestic=FALSE}   => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597

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## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs          support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}          => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}       => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1980198

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## [13] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}   => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}       => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                 => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}       => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}    => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198

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## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}        => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                   => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                  => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                  => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385

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## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}  => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947

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## [13] {aquatic=FALSE} => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE} => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE} => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE} => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE} => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE} => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE} => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE} => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE} => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000

```

```

## lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000

## lhs rhs support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198

## confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947

## lhs rhs support confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758

## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562

```



```

## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370

```

```

## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs      support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}       => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {legs=FALSE} 0.1287129 1.0000000

```

```

## [2] {hair=FALSE,fins=TRUE}      => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}       => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}  => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                 => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}            => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}  => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}  => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}  => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}   => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}  => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}   => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}   => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}    => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}  => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}    => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}  => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385

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```

## [56] {backbone=TRUE,domestic=FALSE}  => {legs=FALSE} 0.1782178 0.2535211
##      lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362

```

```

## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}     => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}     => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}         => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}          => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}     => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}      => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}         => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}     => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}    => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}      => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}         => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}    => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}          => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}      => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}    => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}       => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}          => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}         => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}       => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000

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```

## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135

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## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}  => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence lift
## [1] {milk=TRUE} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal} => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE} => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE} => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE} => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE} => {venomous=FALSE} 0.7326733 0.9487179 1.0303281

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## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}  => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}  => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}  => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}       => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}       => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}      => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}   => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}   => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}      => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}      => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}       => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}      => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE}  => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
##      lhs          rhs          support  confidence lift
## [1] {aquatic=TRUE}  => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE}  => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE}     => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE}       => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE}      => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish}       => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE}      => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE}       => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE}   => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE}  => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE}   => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE}  => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE}    => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE}   => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE}       => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE}   => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE}      => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE}       => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal}     => {domestic=FALSE} 0.3267327 0.8048780 0.9237805

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##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE}      => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
##      lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
##      lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird}                    => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}         => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168

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## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}       => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}      => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}     => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                 => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582

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## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524

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## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
## lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE} => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE} => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231

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## [2] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167

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## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}           => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}        => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}           => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}        => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}            => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}           => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}        => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}            => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}        => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}                => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}            => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}             => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}            => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}                 => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}             => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}                 => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}                => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}                => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}             => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}                => {feathers=TRUE} 0.1980198

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## [31] {eggs=TRUE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}          => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}      => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}          => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}         => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}           => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                   => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}          => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE}       => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE}      => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE}  => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}      => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                 => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889

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## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030

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## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}   => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}  => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082
##      lift

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```

## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016

##      lhs                                rhs                support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109

##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860

##      lhs                                rhs                support  confidence
## [1] {tail=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}      => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000

##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000

##      lhs                                rhs                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198

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## [11] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs      rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE}=> {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs      rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}       => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727

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## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}   => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE}   => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}       => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556

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## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs                                support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                        => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                          => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}          => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}      => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                    => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}          => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}           => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}           => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}            => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}          => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}         => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                        => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}           => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}         => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}          => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}         => {aquatic=TRUE} 0.2475248

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## [20] {feathers=FALSE,eggs=TRUE}      => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}     => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}      => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}   => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}      => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}          => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [32] {airborne=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}          => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}   => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}   => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE}  => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}                 => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                     => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}                => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}                 => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}                 => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690

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## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641
## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}     => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549
##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
##      lift
## [1] 1.624269
##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}     => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2178218 0.4230769
##      lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966

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##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,domestic=FALSE}      => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}        => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}       => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}     => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287 0.4084507
##      lift
## [1] 1.610597
## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs            support  confidence
## [1] {predator=TRUE,catsize=FALSE}     => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE}     => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}     => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}     => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}          => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,toothed=TRUE}           => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}           => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}          => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}          => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}            => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}                => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}          => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support  confidence

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```

## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE}      => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE}      => {domestic=TRUE} 0.1089109 0.1718750
## [4] {backbone=TRUE,fins=FALSE}    => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
## lhs rhs support confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE} => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE} => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE} => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish} => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE} => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE} => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
## lhs rhs support confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
## lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.2000000
## [3] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750

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```

## [4] {backbone=TRUE,fins=FALSE}    => {domestic=TRUE} 0.1089109 0.1666667
## [5] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.553846
## [3] 1.335337
## [4] 1.294872
## [5] 1.238573
## lhs rhs support confidence lift
## [1] {aquatic=TRUE} => {domestic=FALSE} 0.3465347 0.9722222 1.1158460
## [2] {predator=TRUE} => {domestic=FALSE} 0.5346535 0.9642857 1.1067370
## [3] {legs=FALSE} => {domestic=FALSE} 0.2178218 0.9565217 1.0978261
## [4] {breathes=FALSE} => {domestic=FALSE} 0.1980198 0.9523810 1.0930736
## [5] {backbone=FALSE} => {domestic=FALSE} 0.1683168 0.9444444 1.0839646
## [6] {fins=TRUE} => {domestic=FALSE} 0.1584158 0.9411765 1.0802139
## [7] {hair=FALSE} => {domestic=FALSE} 0.5346535 0.9310345 1.0685737
## [8] {type=fish} => {domestic=FALSE} 0.1188119 0.9230769 1.0594406
## [9] {milk=FALSE} => {domestic=FALSE} 0.5445545 0.9166667 1.0520833
## [10] {eggs=TRUE} => {domestic=FALSE} 0.5346535 0.9152542 1.0504622
## [11] {toothed=FALSE} => {domestic=FALSE} 0.3564356 0.9000000 1.0329545
## [12] {airborne=FALSE} => {domestic=FALSE} 0.6732673 0.8831169 1.0135773
## [13] {catsize=FALSE} => {domestic=FALSE} 0.4950495 0.8771930 1.0067783
## [14] {feathers=FALSE} => {domestic=FALSE} 0.7029703 0.8765432 1.0060325
## [15] {catsize=TRUE} => {domestic=FALSE} 0.3762376 0.8636364 0.9912190
## [16] {backbone=TRUE} => {domestic=FALSE} 0.7029703 0.8554217 0.9817908
## [17] {legs=TRUE} => {domestic=FALSE} 0.6534653 0.8461538 0.9711538
## [18] {airborne=TRUE} => {domestic=FALSE} 0.1980198 0.8333333 0.9564394
## [19] {eggs=FALSE} => {domestic=FALSE} 0.3366337 0.8095238 0.9291126
## [20] {milk=TRUE} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## [21] {type=mammal} => {domestic=FALSE} 0.3267327 0.8048780 0.9237805
## lhs rhs support confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {domestic=TRUE} 0.1089109 0.2075472
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.1718750
## [3] {backbone=TRUE,fins=FALSE} => {domestic=TRUE} 0.1089109 0.1666667
## [4] {backbone=TRUE,breathes=TRUE} => {domestic=TRUE} 0.1089109 0.1594203
## lift
## [1] 1.612482
## [2] 1.335337
## [3] 1.294872
## [4] 1.238573
## lhs rhs support confidence
## [1] {aquatic=FALSE,legs=TRUE} => {domestic=TRUE} 0.1188119 0.200000
## [2] {backbone=TRUE,legs=TRUE} => {domestic=TRUE} 0.1089109 0.171875
## lift
## [1] 1.553846
## [2] 1.335337
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053

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## [7] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE} => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE} => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE} => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE} => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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## [61] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175

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## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218

##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}  => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}      => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}       => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}  => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}       => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}    => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}       => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899

##      lhs                rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692

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## [8] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936

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## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}     => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}    => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579

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##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
##      lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,legs=FALSE}    => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
##      lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479

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## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871

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## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catsize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catsize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catsize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catsize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476

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## [43] {aquatic=FALSE,tail=TRUE}      => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE}  => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE}       => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE}      => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE}     => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE}          => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE}  => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE}    => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}     => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}         => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}     => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}     => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}               => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}    => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}     => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}               => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759

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## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793

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## [3] {legs=FALSE}      => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}   => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}   => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}  => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}  => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}   => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}      => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}  => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}  => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}      => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                                     rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                     rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}    => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}  => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031

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## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1]  {milk=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 1.0000000
## [2]  {legs=TRUE,type=mammal}    => {hair=TRUE} 0.3762376 1.0000000
## [3]  {eggs=FALSE,legs=TRUE}      => {hair=TRUE} 0.3663366 0.9736842
## [4]  {toothed=TRUE,legs=TRUE}   => {hair=TRUE} 0.3663366 0.8809524
## [5]  {legs=TRUE,catsize=TRUE}     => {hair=TRUE} 0.2871287 0.7837838
## [6]  {feathers=FALSE,legs=TRUE}  => {hair=TRUE} 0.4158416 0.7241379
## [7]  {airborne=FALSE,legs=TRUE}  => {hair=TRUE} 0.3564356 0.6666667
## [8]  {aquatic=FALSE,legs=TRUE}   => {hair=TRUE} 0.3861386 0.6500000
## [9]  {backbone=TRUE,legs=TRUE}    => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}   => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}       => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}   => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs                                rhs      support  confidence
## [1]  {milk=TRUE,aquatic=FALSE}   => {hair=TRUE} 0.3465347 1.0000000
## [2]  {aquatic=FALSE,type=mammal}   => {hair=TRUE} 0.3465347 1.0000000
## [3]  {eggs=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3465347 0.9722222
## [4]  {aquatic=FALSE,toothed=TRUE}  => {hair=TRUE} 0.3465347 0.9210526
## [5]  {aquatic=FALSE,catsize=TRUE}   => {hair=TRUE} 0.2574257 0.8387097
## [6]  {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7]  {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8]  {aquatic=FALSE,backbone=TRUE}  => {hair=TRUE} 0.3465347 0.6603774
## [9]  {aquatic=FALSE,legs=TRUE}      => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}      => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064

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## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                            => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}                  => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}               => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}                => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}            => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}                => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}              => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}                  => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}                  => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}                  => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}                 => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}               => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}                => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}               => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}                => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}                 => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}             => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}                   => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}                    => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}                => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}                => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}           => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}             => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                               => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238

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## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}        => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}        => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}    => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}       => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}        => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}    => {breathes=TRUE} 0.1188119 0.9230769 1.1653846

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## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}   => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}  => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}      => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}     => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs      support
## [1] {hair=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}    => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs      support
## [1] {legs=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}   => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149

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##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}       => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}          => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}          => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}        => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}         => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}            => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}        => {breathes=FALSE} 0.1980198 0.3636364

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## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {tail=TRUE} 0.1287129 1.0000000
## [2] {type=bird} => {tail=TRUE} 0.1980198 1.0000000
## [3] {feathers=TRUE} => {tail=TRUE} 0.1980198 1.0000000
## [4] {backbone=TRUE,breathes=FALSE} => {tail=TRUE} 0.1386139 1.0000000
## [5] {airborne=TRUE,backbone=TRUE} => {tail=TRUE} 0.1782178 1.0000000
## [6] {toothed=FALSE,backbone=TRUE} => {tail=TRUE} 0.2178218 1.0000000
## [7] {backbone=TRUE,legs=FALSE} => {tail=TRUE} 0.1782178 0.9473684
## [8] {fins=TRUE} => {tail=TRUE} 0.1584158 0.9411765
## [9] {predator=FALSE,catsize=TRUE} => {tail=TRUE} 0.1485149 0.9375000
## [10] {hair=FALSE,backbone=TRUE} => {tail=TRUE} 0.4059406 0.9318182
## [11] {hair=FALSE,catsize=TRUE} => {tail=TRUE} 0.1287129 0.9285714
## [12] {eggs=TRUE,backbone=TRUE} => {tail=TRUE} 0.3861386 0.9285714
## [13] {milk=FALSE,backbone=TRUE} => {tail=TRUE} 0.3861386 0.9285714
## [14] {eggs=TRUE,catsize=TRUE} => {tail=TRUE} 0.1188119 0.9230769
## [15] {milk=FALSE,catsize=TRUE} => {tail=TRUE} 0.1089109 0.9166667
## [16] {predator=FALSE,backbone=TRUE} => {tail=TRUE} 0.3267327 0.9166667
## [17] {aquatic=FALSE,backbone=TRUE} => {tail=TRUE} 0.4752475 0.9056604
## [18] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [19] {backbone=TRUE,catsize=FALSE} => {tail=TRUE} 0.3564356 0.9000000
## [20] {eggs=FALSE,domestic=FALSE} => {tail=TRUE} 0.2970297 0.8823529
## [21] {milk=TRUE,domestic=FALSE} => {tail=TRUE} 0.2871287 0.8787879
## [22] {domestic=FALSE,type=mammal} => {tail=TRUE} 0.2871287 0.8787879
## [23] {predator=FALSE,toothed=TRUE} => {tail=TRUE} 0.2079208 0.8750000
## [24] {hair=FALSE,toothed=TRUE} => {tail=TRUE} 0.1980198 0.8695652
## [25] {domestic=FALSE,catsize=TRUE} => {tail=TRUE} 0.3267327 0.8684211
## [26] {aquatic=FALSE,toothed=TRUE} => {tail=TRUE} 0.3267327 0.8684211
## [27] {toothed=TRUE,domestic=FALSE} => {tail=TRUE} 0.4455446 0.8653846
## [28] {catsize=TRUE} => {tail=TRUE} 0.3762376 0.8636364
## [29] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [30] {eggs=FALSE} => {tail=TRUE} 0.3564356 0.8571429
## [31] {milk=FALSE,toothed=TRUE} => {tail=TRUE} 0.1782178 0.8571429
## [32] {milk=TRUE} => {tail=TRUE} 0.3465347 0.8536585
## [33] {type=mammal} => {tail=TRUE} 0.3465347 0.8536585
## [34] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [35] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [36] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [37] {hair=TRUE,predator=TRUE} => {tail=TRUE} 0.1584158 0.8000000
## [38] {hair=TRUE,domestic=FALSE} => {tail=TRUE} 0.2673267 0.7941176
## [39] {venomous=FALSE,legs=FALSE} => {tail=TRUE} 0.1485149 0.7894737
## [40] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
## [41] {legs=FALSE} => {tail=TRUE} 0.1782178 0.7826087
## [42] {airborne=FALSE,aquatic=FALSE} => {tail=TRUE} 0.3564356 0.7826087

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## [43] {airborne=FALSE,breathes=TRUE} => {tail=TRUE} 0.4257426 0.7678571
## [44] {hair=TRUE} => {tail=TRUE} 0.3267327 0.7674419
## [45] {breathes=TRUE,domestic=FALSE} => {tail=TRUE} 0.5148515 0.7647059
## [46] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170
## [47] {aquatic=FALSE} => {tail=TRUE} 0.4851485 0.7538462
## [48] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000
## [49] {predator=TRUE} => {tail=TRUE} 0.4158416 0.7500000
## [50] {airborne=FALSE,predator=FALSE} => {tail=TRUE} 0.2079208 0.7500000
## [51] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364
## [52] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333
## [53] {hair=FALSE} => {tail=TRUE} 0.4158416 0.7241379
## [54] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123
## [55] {eggs=TRUE} => {tail=TRUE} 0.3861386 0.6610169
## [56] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228
## [57] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000
## lift
## [1] 1.3466667
## [2] 1.3466667
## [3] 1.3466667
## [4] 1.3466667
## [5] 1.3466667
## [6] 1.3466667
## [7] 1.2757895
## [8] 1.2674510
## [9] 1.2625000
## [10] 1.2548485
## [11] 1.2504762
## [12] 1.2504762
## [13] 1.2504762
## [14] 1.2430769
## [15] 1.2344444
## [16] 1.2344444
## [17] 1.2196226
## [18] 1.2138967
## [19] 1.2120000
## [20] 1.1882353
## [21] 1.1834343
## [22] 1.1834343
## [23] 1.1783333
## [24] 1.1710145
## [25] 1.1694737
## [26] 1.1694737
## [27] 1.1653846
## [28] 1.1630303
## [29] 1.1576608
## [30] 1.1542857
## [31] 1.1542857
## [32] 1.1495935
## [33] 1.1495935
## [34] 1.1049573
## [35] 1.1018182
## [36] 1.0972840
## [37] 1.0773333
## [38] 1.0694118

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## [39] 1.0631579
## [40] 1.0593778
## [41] 1.0539130
## [42] 1.0539130
## [43] 1.0340476
## [44] 1.0334884
## [45] 1.0298039
## [46] 1.0163522
## [47] 1.0151795
## [48] 1.0100000
## [49] 1.0100000
## [50] 1.0100000
## [51] 0.9946970
## [52] 0.9875556
## [53] 0.9751724
## [54] 0.9144033
## [55] 0.8901695
## [56] 0.8741520
## [57] 0.7743333

##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444 3.6688034
## [2] {fins=FALSE}      => {tail=FALSE} 0.2475248 0.2976190 1.1561355
## [3] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636 1.0152972
## [4] {predator=TRUE}   => {tail=FALSE} 0.1386139 0.2500000 0.9711538
## [5] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591 0.9189413

##      lhs                      rhs      support  confidence
## [1] {backbone=TRUE,domestic=FALSE} => {tail=TRUE} 0.6336634 0.9014085
## [2] {eggs=FALSE,domestic=FALSE}    => {tail=TRUE} 0.2970297 0.8823529
## [3] {milk=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2871287 0.8787879
## [4] {domestic=FALSE,type=mammal}    => {tail=TRUE} 0.2871287 0.8787879
## [5] {domestic=FALSE,catsize=TRUE}   => {tail=TRUE} 0.3267327 0.8684211
## [6] {toothed=TRUE,domestic=FALSE}   => {tail=TRUE} 0.4455446 0.8653846
## [7] {hair=TRUE,domestic=FALSE}      => {tail=TRUE} 0.2673267 0.7941176
## [8] {breathes=TRUE,domestic=FALSE} => {tail=TRUE} 0.5148515 0.7647059
## [9] {aquatic=FALSE,domestic=FALSE} => {tail=TRUE} 0.3960396 0.7547170

##      lift
## [1] 1.213897
## [2] 1.188235
## [3] 1.183434
## [4] 1.183434
## [5] 1.169474
## [6] 1.165385
## [7] 1.069412
## [8] 1.029804
## [9] 1.016352

##      lhs                      rhs      support  confidence
## [1] {predator=TRUE,breathes=TRUE} => {tail=TRUE} 0.3168317 0.8205128
## [2] {aquatic=FALSE,predator=TRUE} => {tail=TRUE} 0.2178218 0.8148148
## [3] {hair=TRUE,predator=TRUE}     => {tail=TRUE} 0.1584158 0.8000000

##      lift
## [1] 1.104957
## [2] 1.097284
## [3] 1.077333

##      lhs                      rhs      support  confidence

```

```

## [1] {toothed=TRUE,venomous=FALSE} => {tail=TRUE} 0.4851485 0.8596491
## [2] {airborne=TRUE,venomous=FALSE} => {tail=TRUE} 0.1782178 0.8181818
## [3] {venomous=FALSE,legs=FALSE} => {tail=TRUE} 0.1485149 0.7894737
## [4] {breathes=TRUE,venomous=FALSE} => {tail=TRUE} 0.5841584 0.7866667
## lift
## [1] 1.157661
## [2] 1.101818
## [3] 1.063158
## [4] 1.059378
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208

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## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}      => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                        => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs          support  confidence lift
## [1] {type=bird}                  => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}               => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}              => {breathes=TRUE} 0.2376238 1.0000000 1.2625000

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## [4] {milk=TRUE}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}    => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}      => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}  => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}     => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}      => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}  => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}=> {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}  => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE} => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}     => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}=> {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}    => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}=> {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}  => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}  => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}      => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}     => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE}=> {breathes=TRUE} 0.1089109 0.6111111 0.7715278

##      lhs                                     rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}=> {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}=> {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}=> {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

##      lhs                                     rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}     => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}=> {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}=> {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562

##      lhs                                     rhs      support

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## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}            => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}           => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}               => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}               => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}             => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}             => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}            => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}            => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}               => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}           => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}              => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}              => {breathes=FALSE} 0.1584158 0.8000000

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## [3] {milk=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}    => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}  => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}      => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}                  => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}    => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}         => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}        => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}             => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}            => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}        => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}         => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}             => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}        => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}          => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}          => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}         => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}            => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}         => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}         => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}     => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}        => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}             => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}        => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}        => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}         => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                      => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}          => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}         => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}         => {tail=FALSE} 0.1782178 0.2727273

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## [36] {domestic=FALSE}      => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}         => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}        => {tail=FALSE} 0.2178218 0.2365591
##      lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}  => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE} => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}    => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}  => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}    => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}     => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}   => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}    => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}    => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE} => {tail=TRUE} 0.4851485 0.7538462 1.0151795

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## [12] {airborne=TRUE} => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE} => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE} => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE} => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE} => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE} => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250

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## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158

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## [8] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}   => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                  => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}       => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}           => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}           => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}            => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}      => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}       => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                      => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                  => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000

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## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}      => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}      => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771

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##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs      support
## [1] {aquatic=FALSE,tail=FALSE}   => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs      support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}        => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}   => {backbone=FALSE} 0.1089109 0.2972973

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## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE} => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal} => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE} => {aquatic=FALSE} 0.1881188

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## [7] {hair=TRUE,predator=FALSE} => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE} => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE} => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal} => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE} => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE} => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE} => {aquatic=FALSE} 0.3564356
## [19] {hair=TRUE} => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE} => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE} => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE} => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE} => {aquatic=FALSE} 0.3465347
## [26] {type=mammal} => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE} => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE} => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE} => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE} => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE} => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE} => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE} => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE} => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE} => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE} => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE} => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE} => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE} => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE} => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE} => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE} => {aquatic=FALSE} 0.2871287
## confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488

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## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580
## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}     => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}=> {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}    => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}  => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}      => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}=> {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}  => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE}  => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111

##      lhs      rhs      support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE}=> {aquatic=FALSE} 0.1485149 0.6818182

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## lift
## [1] 1.247786
## [2] 1.059441
## lhs rhs support confidence
## [1] {fins=FALSE,tail=TRUE} => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE} => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
## lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936
## lhs rhs support confidence
## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
## lift
## [1] 1.230969
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
## lift
## [1] 1.080936
## [2] 1.059441
## lhs rhs support confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE} => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE} => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
## lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198

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## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}      => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}       => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}  => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}       => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}    => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}      => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}    => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}     => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}    => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}     => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}      => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}     => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}  => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}        => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}     => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                    => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524

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## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}  => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}       => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}     => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}       => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}   => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}      => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}       => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}   => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}  => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}   => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}  => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}  => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}   => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}       => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198

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## [3] {eggs=TRUE,domestic=FALSE}      => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704  1.781305
## [2] 0.3636364  1.748918
## [3] 0.3518519  1.692240
## [4] 0.3000000  1.442857
## [5] 0.2941176  1.414566
## [6] 0.2816901  1.354795
## [7] 0.2500000  1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}          => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}           => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}          => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}        => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613  3.102919
## [2] 0.5526316  2.657895
## [3] 0.5405405  2.599743
## [4] 0.5250000  2.525000
## [5] 0.4444444  2.137566
## [6] 0.3469388  1.668610
## [7] 0.2941176  1.414566
## [8] 0.2876712  1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}         => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000  3.607143
## [2] 0.6521739  3.136646
## [3] 0.4444444  2.137566
## [4] 0.4285714  2.061224
## [5] 0.3720930  1.789590
## [6] 0.3636364  1.748918
## [7] 0.3000000  1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}           => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}              => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}          => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}         => {breathes=FALSE} 0.1683168

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## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000

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## [4] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}   => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                  => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}            => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}  => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}  => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}  => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}   => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}  => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}   => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}   => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}    => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}    => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}  => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift

```

[1] 4.391304
[2] 4.391304
[3] 4.391304
[4] 4.391304
[5] 4.391304
[6] 4.391304
[7] 4.391304
[8] 4.132992
[9] 3.436673
[10] 3.345756
[11] 3.345756
[12] 3.293478
[13] 3.245747
[14] 2.702341
[15] 2.634783
[16] 2.549790
[17] 2.542334
[18] 2.415217
[19] 2.332880
[20] 2.311213
[21] 2.254994
[22] 2.195652
[23] 2.139353
[24] 2.026756
[25] 1.951691
[26] 1.951691
[27] 1.881988
[28] 1.808184
[29] 1.796443
[30] 1.780259
[31] 1.756522
[32] 1.729908
[33] 1.707729
[34] 1.688963
[35] 1.672878
[36] 1.633974
[37] 1.588344
[38] 1.568323
[39] 1.523514
[40] 1.520067
[41] 1.516996
[42] 1.463768
[43] 1.463768
[44] 1.437154
[45] 1.424207
[46] 1.420716
[47] 1.414149
[48] 1.386728
[49] 1.383562
[50] 1.360686
[51] 1.333075
[52] 1.324362
[53] 1.317391
[54] 1.317391

```

## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}     => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}    => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}         => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}          => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}     => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}      => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}         => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}     => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}    => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}      => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}         => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}    => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}          => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}      => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}    => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}       => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}           => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}         => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}      => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift

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## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                                rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}   => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE}=> {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE}=> {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}       => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE}   => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}        => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}     => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}       => {legs=FALSE} 0.1287129 0.3939394

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## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}  => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish}                  => {hair=FALSE} 0.1287129 1.0000000
## [2] {breathes=FALSE}             => {hair=FALSE} 0.2079208 1.0000000
## [3] {eggs=TRUE,fins=TRUE}        => {hair=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}       => {hair=FALSE} 0.1287129 1.0000000
## [5] {airborne=FALSE,backbone=FALSE} => {hair=FALSE} 0.1188119 1.0000000
## [6] {legs=FALSE,catsize=FALSE}   => {hair=FALSE} 0.1584158 1.0000000
## [7] {eggs=TRUE,legs=FALSE}       => {hair=FALSE} 0.1881188 1.0000000
## [8] {milk=FALSE,legs=FALSE}      => {hair=FALSE} 0.1980198 1.0000000
## [9] {aquatic=TRUE,catsize=FALSE} => {hair=FALSE} 0.2277228 1.0000000
## [10] {milk=FALSE,aquatic=TRUE}    => {hair=FALSE} 0.2970297 1.0000000

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## [11] {milk=FALSE,catsize=TRUE}      => {hair=FALSE} 0.1188119 1.0000000
## [12] {milk=FALSE,predator=TRUE}     => {hair=FALSE} 0.3366337 1.0000000
## [13] {eggs=TRUE,toothed=TRUE}       => {hair=FALSE} 0.1980198 1.0000000
## [14] {milk=FALSE,toothed=TRUE}     => {hair=FALSE} 0.2079208 1.0000000
## [15] {milk=FALSE,tail=TRUE}        => {hair=FALSE} 0.3960396 1.0000000
## [16] {milk=FALSE,airborne=FALSE}   => {hair=FALSE} 0.3762376 1.0000000
## [17] {milk=FALSE,backbone=TRUE}    => {hair=FALSE} 0.4158416 1.0000000
## [18] {eggs=TRUE,backbone=TRUE}     => {hair=FALSE} 0.4059406 0.9761905
## [19] {eggs=TRUE,tail=TRUE}        => {hair=FALSE} 0.3762376 0.9743590
## [20] {eggs=TRUE,airborne=FALSE}    => {hair=FALSE} 0.3564356 0.9729730
## [21] {eggs=TRUE,predator=TRUE}     => {hair=FALSE} 0.3168317 0.9696970
## [22] {eggs=TRUE,aquatic=TRUE}      => {hair=FALSE} 0.2871287 0.9666667
## [23] {milk=FALSE,venomous=FALSE}   => {hair=FALSE} 0.4950495 0.9615385
## [24] {legs=FALSE}                 => {hair=FALSE} 0.2178218 0.9565217
## [25] {toothed=FALSE,tail=TRUE}     => {hair=FALSE} 0.2178218 0.9565217
## [26] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [27] {predator=TRUE,toothed=FALSE} => {hair=FALSE} 0.1782178 0.9473684
## [28] {milk=FALSE,domestic=FALSE}   => {hair=FALSE} 0.5148515 0.9454545
## [29] {airborne=FALSE,toothed=FALSE} => {hair=FALSE} 0.1683168 0.9444444
## [30] {predator=TRUE,catsize=FALSE} => {hair=FALSE} 0.2574257 0.9285714
## [31] {eggs=TRUE,domestic=FALSE}    => {hair=FALSE} 0.4950495 0.9259259
## [32] {aquatic=TRUE,toothed=FALSE}  => {hair=FALSE} 0.1188119 0.9230769
## [33] {eggs=TRUE,catsize=TRUE}      => {hair=FALSE} 0.1188119 0.9230769
## [34] {aquatic=TRUE,fins=FALSE}     => {hair=FALSE} 0.1683168 0.8947368
## [35] {aquatic=TRUE}               => {hair=FALSE} 0.3168317 0.8888889
## [36] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [37] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [38] {toothed=FALSE}              => {hair=FALSE} 0.3465347 0.8750000
## [39] {backbone=FALSE,venomous=FALSE} => {hair=FALSE} 0.1188119 0.8571429
## [40] {airborne=FALSE,catsize=FALSE} => {hair=FALSE} 0.2871287 0.8055556
## [41] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [42] {tail=TRUE,catsize=FALSE}     => {hair=FALSE} 0.2871287 0.7837838
## [43] {venomous=FALSE,catsize=FALSE} => {hair=FALSE} 0.3861386 0.7800000
## [44] {backbone=FALSE}             => {hair=FALSE} 0.1386139 0.7777778
## [45] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
## [46] {catsize=FALSE}              => {hair=FALSE} 0.4356436 0.7719298
## [47] {airborne=TRUE}              => {hair=FALSE} 0.1782178 0.7500000
## [48] {tail=FALSE,domestic=FALSE}   => {hair=FALSE} 0.1584158 0.6956522
## [49] {predator=TRUE}              => {hair=FALSE} 0.3564356 0.6428571
## [50] {venomous=FALSE,tail=FALSE}   => {hair=FALSE} 0.1386139 0.6363636
## [51] {tail=FALSE}                 => {hair=FALSE} 0.1584158 0.6153846
## [52] {backbone=TRUE}              => {hair=FALSE} 0.4356436 0.5301205
## [53] {breathes=TRUE}              => {hair=FALSE} 0.3663366 0.4625000
## [54] {legs=TRUE}                  => {hair=FALSE} 0.3564356 0.4615385
## [55] {aquatic=FALSE}              => {hair=FALSE} 0.2574257 0.4000000
## lift
## [1] 1.7413793
## [2] 1.7413793
## [3] 1.7413793
## [4] 1.7413793
## [5] 1.7413793
## [6] 1.7413793
## [7] 1.7413793
## [8] 1.7413793

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## [9] 1.7413793
## [10] 1.7413793
## [11] 1.7413793
## [12] 1.7413793
## [13] 1.7413793
## [14] 1.7413793
## [15] 1.7413793
## [16] 1.7413793
## [17] 1.7413793
## [18] 1.6999179
## [19] 1.6967286
## [20] 1.6943150
## [21] 1.6886102
## [22] 1.6833333
## [23] 1.6744032
## [24] 1.6656672
## [25] 1.6656672
## [26] 1.6622257
## [27] 1.6497278
## [28] 1.6463950
## [29] 1.6446360
## [30] 1.6169951
## [31] 1.6123883
## [32] 1.6074271
## [33] 1.6074271
## [34] 1.5580762
## [35] 1.5478927
## [36] 1.5478927
## [37] 1.5478927
## [38] 1.5237069
## [39] 1.4926108
## [40] 1.4027778
## [41] 1.3931034
## [42] 1.3648649
## [43] 1.3582759
## [44] 1.3544061
## [45] 1.3495690
## [46] 1.3442226
## [47] 1.3060345
## [48] 1.2113943
## [49] 1.1194581
## [50] 1.1081505
## [51] 1.0716180
## [52] 0.9231408
## [53] 0.8053879
## [54] 0.8037135
## [55] 0.6965517
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [2] {type=mammal}   => {hair=TRUE} 0.3861386 0.9512195 2.2342598
## [3] {eggs=FALSE}    => {hair=TRUE} 0.3762376 0.9047619 2.1251384
## [4] {toothed=TRUE}  => {hair=TRUE} 0.3762376 0.6229508 1.4632101
## [5] {predator=FALSE}=> {hair=TRUE} 0.2277228 0.5111111 1.2005168
## [6] {backbone=TRUE}=> {hair=TRUE} 0.3861386 0.4698795 1.1036705

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## [7] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636 0.9075053
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1
## [2] {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1
##      lift
## [1] 1.741379
## [2] 1.741379
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,backbone=TRUE} => {hair=FALSE} 0.4158416 1.0000000
## [2] {eggs=TRUE,backbone=TRUE}  => {hair=FALSE} 0.4059406 0.9761905
## [3] {toothed=FALSE,backbone=TRUE} => {hair=FALSE} 0.2079208 0.9545455
## [4] {airborne=TRUE,backbone=TRUE} => {hair=FALSE} 0.1584158 0.8888889
## [5] {backbone=TRUE,catsize=FALSE} => {hair=FALSE} 0.3069307 0.7750000
##      lift
## [1] 1.741379
## [2] 1.699918
## [3] 1.662226
## [4] 1.547893
## [5] 1.349569
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,domestic=FALSE} => {hair=FALSE} 0.5148515 0.9454545
## [2] {eggs=TRUE,domestic=FALSE}  => {hair=FALSE} 0.4950495 0.9259259
## [3] {toothed=FALSE,domestic=FALSE} => {hair=FALSE} 0.3168317 0.8888889
## [4] {domestic=FALSE,catsize=FALSE} => {hair=FALSE} 0.3960396 0.8000000
## [5] {tail=FALSE,domestic=FALSE}  => {hair=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.646395
## [2] 1.612388
## [3] 1.547893
## [4] 1.393103
## [5] 1.211394
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {catsize=FALSE,type=bird}    => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird}                  => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}               => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}     => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}   => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}     => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}               => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}         => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218

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## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}         => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}              => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316

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## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094

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## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}      => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}       => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}   => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}      => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}  => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}  => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}   => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs            support  confidence
## [1] {toothed=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE}   => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000

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## [3] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}=> {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support

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## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catSize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}      => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catSize=FALSE}   => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catSize=FALSE} => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE} => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE} => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catSize=FALSE} => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE} => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE} => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catSize=FALSE} => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE} => {predator=FALSE} 0.2178218

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## [16] {legs=TRUE,catsize=FALSE}      => {predator=FALSE} 0.2277228
## [17] {type=bird}                     => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE}                 => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE}   => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE}                 => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE}      => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE}                 => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE}           => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE}     => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE}          => {predator=FALSE} 0.2871287
## [29] {milk=TRUE}                     => {predator=FALSE} 0.1881188
## [30] {type=mammal}                   => {predator=FALSE} 0.1881188
## [31] {tail=FALSE}                    => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE}                    => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE}                     => {predator=FALSE} 0.2574257
## [34] {milk=FALSE}                    => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE}                => {predator=FALSE} 0.3366337
## [36] {hair=FALSE}                    => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE}                  => {predator=FALSE} 0.1584158
##      confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974

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## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs          support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}      => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}   => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}  => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}     => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}      => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}       => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}  => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs          support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}    => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs          support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                      rhs          support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}   => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}     => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}    => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=bird}                  => {breathes=TRUE} 0.1980198
## [2] {feathers=TRUE}               => {breathes=TRUE} 0.1980198
## [3] {airborne=TRUE}              => {breathes=TRUE} 0.2376238
## [4] {milk=TRUE}                  => {breathes=TRUE} 0.4059406
## [5] {type=mammal}                => {breathes=TRUE} 0.4059406
## [6] {hair=TRUE}                  => {breathes=TRUE} 0.4257426

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## [7] {fins=FALSE,domestic=TRUE} => {breathes=TRUE} 0.1188119
## [8] {toothed=FALSE,tail=TRUE} => {breathes=TRUE} 0.2277228
## [9] {toothed=FALSE,backbone=TRUE} => {breathes=TRUE} 0.2178218
## [10] {eggs=FALSE,predator=FALSE} => {breathes=TRUE} 0.1881188
## [11] {eggs=FALSE,legs=TRUE} => {breathes=TRUE} 0.3762376
## [12] {predator=FALSE,catsize=TRUE} => {breathes=TRUE} 0.1584158
## [13] {aquatic=FALSE,catsize=TRUE} => {breathes=TRUE} 0.3069307
## [14] {predator=FALSE,legs=TRUE} => {breathes=TRUE} 0.3861386
## [15] {predator=FALSE,fins=FALSE} => {breathes=TRUE} 0.4059406
## [16] {aquatic=FALSE,toothed=TRUE} => {breathes=TRUE} 0.3762376
## [17] {toothed=TRUE,legs=TRUE} => {breathes=TRUE} 0.4158416
## [18] {aquatic=FALSE,tail=TRUE} => {breathes=TRUE} 0.4851485
## [19] {aquatic=FALSE,backbone=TRUE} => {breathes=TRUE} 0.5247525
## [20] {legs=TRUE,tail=TRUE} => {breathes=TRUE} 0.5643564
## [21] {backbone=TRUE,legs=TRUE} => {breathes=TRUE} 0.6336634
## [22] {backbone=TRUE,fins=FALSE} => {breathes=TRUE} 0.6435644
## [23] {aquatic=FALSE} => {breathes=TRUE} 0.6336634
## [24] {fins=FALSE,tail=TRUE} => {breathes=TRUE} 0.5742574
## [25] {toothed=TRUE,fins=FALSE} => {breathes=TRUE} 0.4257426
## [26] {eggs=FALSE} => {breathes=TRUE} 0.4059406
## [27] {legs=TRUE,catsize=TRUE} => {breathes=TRUE} 0.3564356
## [28] {fins=FALSE,catsize=TRUE} => {breathes=TRUE} 0.3465347
## [29] {legs=TRUE} => {breathes=TRUE} 0.7227723
## [30] {domestic=TRUE} => {breathes=TRUE} 0.1188119
## [31] {venomous=FALSE,fins=FALSE} => {breathes=TRUE} 0.7029703
## [32] {predator=FALSE,domestic=FALSE} => {breathes=TRUE} 0.3069307
## [33] {predator=FALSE} => {breathes=TRUE} 0.4059406
## [34] {catsize=TRUE} => {breathes=TRUE} 0.3861386
## [35] {toothed=FALSE,venomous=FALSE} => {breathes=TRUE} 0.2970297
## [36] {toothed=FALSE} => {breathes=TRUE} 0.3267327
## [37] {tail=TRUE} => {breathes=TRUE} 0.6039604
## [38] {domestic=FALSE} => {breathes=TRUE} 0.6732673
## [39] {tail=FALSE} => {breathes=TRUE} 0.1881188
## [40] {airborne=FALSE} => {breathes=TRUE} 0.5544554
## [41] {catsize=FALSE} => {breathes=TRUE} 0.4059406
## [42] {predator=TRUE} => {breathes=TRUE} 0.3861386
## [43] {eggs=TRUE} => {breathes=TRUE} 0.3861386
## [44] {milk=FALSE} => {breathes=TRUE} 0.3861386
## [45] {backbone=FALSE} => {breathes=TRUE} 0.1089109
## confidence lift
## [1] 1.0000000 1.2625000
## [2] 1.0000000 1.2625000
## [3] 1.0000000 1.2625000
## [4] 1.0000000 1.2625000
## [5] 1.0000000 1.2625000
## [6] 1.0000000 1.2625000
## [7] 1.0000000 1.2625000
## [8] 1.0000000 1.2625000
## [9] 1.0000000 1.2625000
## [10] 1.0000000 1.2625000
## [11] 1.0000000 1.2625000
## [12] 1.0000000 1.2625000
## [13] 1.0000000 1.2625000
## [14] 1.0000000 1.2625000

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## [15] 1.0000000 1.2625000
## [16] 1.0000000 1.2625000
## [17] 1.0000000 1.2625000
## [18] 1.0000000 1.2625000
## [19] 1.0000000 1.2625000
## [20] 1.0000000 1.2625000
## [21] 1.0000000 1.2625000
## [22] 0.9848485 1.2433712
## [23] 0.9846154 1.2430769
## [24] 0.9830508 1.2411017
## [25] 0.9772727 1.2338068
## [26] 0.9761905 1.2324405
## [27] 0.9729730 1.2283784
## [28] 0.9722222 1.2274306
## [29] 0.9358974 1.1815705
## [30] 0.9230769 1.1653846
## [31] 0.9220779 1.1641234
## [32] 0.9117647 1.1511029
## [33] 0.9111111 1.1502778
## [34] 0.8863636 1.1190341
## [35] 0.8333333 1.0520833
## [36] 0.8250000 1.0415625
## [37] 0.8133333 1.0268333
## [38] 0.7727273 0.9755682
## [39] 0.7307692 0.9225962
## [40] 0.7272727 0.9181818
## [41] 0.7192982 0.9081140
## [42] 0.6964286 0.8792411
## [43] 0.6610169 0.8345339
## [44] 0.6500000 0.8206250
## [45] 0.6111111 0.7715278
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {breathes=FALSE} 0.1287129 1.0000000 4.8095238
## [2] {tail=TRUE} => {breathes=FALSE} 0.1386139 0.1866667 0.8977778
##      lhs      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {breathes=TRUE} 0.2277228 1.0000000
## [2] {aquatic=FALSE,tail=TRUE} => {breathes=TRUE} 0.4851485 1.0000000
## [3] {legs=TRUE,tail=TRUE}      => {breathes=TRUE} 0.5643564 1.0000000
## [4] {fins=FALSE,tail=TRUE}     => {breathes=TRUE} 0.5742574 0.9830508
##      lift
## [1] 1.262500
## [2] 1.262500
## [3] 1.262500
## [4] 1.241102
## [1] "Número de reglas con consecuente negado"
##      lhs      rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}    => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}  => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE} => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}      => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}     => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}        => {milk=TRUE} 0.3267327 1.0000000

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## [9] {hair=TRUE,airborne=FALSE} => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE} => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE} => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catSize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catSize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catSize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catSize=TRUE} => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catSize=TRUE} => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catSize=TRUE} => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catSize=TRUE} => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catSize=TRUE} => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catSize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catSize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE} => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729

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## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE} => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE} => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213

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## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}     => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}          => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}           => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}         => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}      => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}         => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}       => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}        => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}         => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}      => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}      => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}       => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026

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## lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
## lhs rhs support confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE} => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415

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## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
##      lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,toothed=TRUE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE}    => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE}     => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE}        => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE}   => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
##      lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence lift
## [1] {milk=TRUE}                      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                     => {venomous=FALSE} 0.4059406 1.0000000 1.0860215

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## [3] {catsize=TRUE}    => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE} => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}      => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}     => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE} => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}      => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}       => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}  => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}  => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE} => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE} => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE} => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE} => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}      => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}     => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}     => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE} => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE} => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                          => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}                  => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}                   => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}                   => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}            => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}               => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}           => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                             => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}                => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                        => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}                 => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}                 => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}               => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}                 => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}             => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}             => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}               => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}               => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}                 => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}               => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}                => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}               => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}                => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}              => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}                => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE}            => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}                   => {legs=FALSE} 0.1782178 0.4285714

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## [28] {milk=FALSE,predator=TRUE}    => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}        => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}   => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}         => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}    => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}   => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE}  => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}               => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}     => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756

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## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}  => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE} => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359

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##      lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}   => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}     => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}     => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}  => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs      rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs      rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}     => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514

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## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}   => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}    => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}      => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}      => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift
## [1] 4.391304
## [2] 3.345756

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## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                    => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}       => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}     => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}     => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                 => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}       => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}            => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000

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## [35] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}     => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}      => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                  => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667

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## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE} => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}  => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}      => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}      => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619

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## [9] {domestic=TRUE} => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE} => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal} => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE} => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE} => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE} => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE} => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE} => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE} => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE} => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE} => {fins=FALSE} 0.1881188 0.5277778 0.6345899
## lhs rhs support confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054

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## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}     => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}      => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE}   => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176

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```

##      lhs      rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2222222
##      lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
##      lhs      rhs      support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE}    => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521

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```

## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000

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## [6] {milk=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE}=> {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE}=> {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs          rhs          support  confidence
## [1] {aquatic=TRUE,legs=FALSE}    => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}  => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE}=> {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE}=> {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
## lhs          rhs          support  confidence
## [1] {backbone=FALSE,venomous=FALSE}=> {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE}              => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE}=> {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE}=> {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE}     => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE}    => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE}=> {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE}        => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE}       => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE}    => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE}         => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE}        => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE}   => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}     => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}=> {tail=FALSE} 0.1386139 0.3888889

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## [17] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}     => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}     => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}     => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}=> {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}=> {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}    => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}   => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}     => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                  => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}      => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}     => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}     => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}              => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}               => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}              => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186

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## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413

##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}          => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}          => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}       => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}         => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}          => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}        => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}         => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}          => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}     => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}     => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}       => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}     => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}     => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}         => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}     => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}           => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}       => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}      => {tail=TRUE} 0.2277228 0.5750000 0.7743333

##      lhs                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041

##      lhs                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661

##      lhs                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441

##      lhs                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412

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## lift
## [1] 1.371041
## lhs rhs support confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
## lhs rhs support confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
## lhs rhs support confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## lift
## [1] 1.806798
## [2] 1.618590

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## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}           => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}         => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}           => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}          => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}           => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}           => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}         => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                           => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                         => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}            => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}              => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}                  => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}              => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                           => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}              => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}              => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                            => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}             => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}                 => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}             => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}           => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}           => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}               => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}             => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}           => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}               => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}                => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}            => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}            => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}            => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}           => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}           => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}               => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}                 => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}            => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}            => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}          => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}                => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}                    => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}                => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}                => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}              => {catsize=TRUE} 0.3267327

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## [43] {feathers=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}     => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}         => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                 => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                   => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                   => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372

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## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}     => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}   => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}  => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE}=> {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}      => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}    => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}  => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE}=> {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE}=> {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE}=> {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE}=> {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}   => {catsize=TRUE} 0.2277228 0.5476190

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## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
## lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
## lhs rhs support confidence
## [1] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE} => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE} => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE} => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs rhs support confidence
## [1] {hair=TRUE,predator=TRUE} => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE} => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE} => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE} => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs rhs support confidence
## [1] {eggs=FALSE,predator=TRUE} => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245

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## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=bird}                            => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                        => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}             => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}              => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}               => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}               => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}              => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}                   => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}                   => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}                   => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}                => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}               => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}                  => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}               => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}              => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}               => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}              => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}               => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}              => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}               => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}                => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}               => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}              => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}                 => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}                => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                             => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                             => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}             => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}               => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}              => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}               => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}             => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE}           => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}                          => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}              => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE}          => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}              => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}                => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}               => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE}           => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE}           => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}                          => {toothed=FALSE} 0.1881188
##      confidence lift

```

```

## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs      rhs      support  confidence lift
## [1] {type=fish} => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}  => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE} => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE} => {toothed=TRUE} 0.1881188 0.8260870 1.3677833

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## [5] {catsize=TRUE}    => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}     => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE} => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}   => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}    => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs          support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                      rhs          support
## [1] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}     => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423

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```

## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                rhs      support  confidence
## [1] {tail=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}=> {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE}    => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}     => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}         => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}        => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}         => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE}     => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE}    => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}     => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}         => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}        => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}         => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}     => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}    => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793

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## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                            => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}                   => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}                   => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}               => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}                 => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}                 => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}              => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}                  => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}                  => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}                 => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}                 => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}               => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}                => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}               => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}                => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}                 => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}             => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}                   => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}                    => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}                => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}                => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}             => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}           => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}             => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                              => {breathes=FALSE} 0.1386139

```

```

##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs      rhs      support  confidence lift
## [1] {type=bird} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE} => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE} => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE} => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal} => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE} => {breathes=TRUE} 0.4257426 1.0000000 1.2625000

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## [7] {aquatic=FALSE} => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE} => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE} => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE} => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE} => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE} => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE} => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE} => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE} => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE} => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE} => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE} => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE} => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                                     rhs      support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                     rhs      support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                     rhs      support
## [1] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158

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## [4] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
## lhs rhs support
## [1] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}   => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}    => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}    => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}   => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}   => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}    => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}       => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1881188 0.3518519
## lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}      => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}    => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}  => {breathes=FALSE} 0.2079208 0.5526316

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## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}    => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE} => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE} => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE} => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE} => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429

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## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878

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## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}       => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}     => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}   => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}    => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385

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## lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
## lhs rhs support confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385

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## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452

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## [5] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {catsize=FALSE,type=bird} => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1287129
## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158

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## [46] {milk=FALSE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}        => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}       => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}             => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}            => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}            => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                   => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}                  => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333

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## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}        => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}       => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}        => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}    => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}       => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}   => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}        => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}         => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}   => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}    => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564

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## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}   => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}   => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}       => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## lift

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## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}  => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667

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## [5] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [14] {feathers=FALSE,fins=FALSE} => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE} => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE} => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE} => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE} => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE} => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE} => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE} => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE} => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE} => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE} => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE} => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE} => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE} => {tail=FALSE} 0.2178218 0.2365591
## lift

```

```

## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965
## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}      => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}   => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}        => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}     => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}       => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}        => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}      => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}       => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}        => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}   => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}    => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}     => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}   => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}   => {tail=TRUE} 0.3267327 0.7333333 0.9875556

```

```

## [16] {hair=FALSE}      => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE} => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}      => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE} => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE} => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}      => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                                rhs      support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                                rhs      support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966
## [4] 1.059441
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}        => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE}    => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}         => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}     => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}     => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}      => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift

```

```

## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}      => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}       => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}   => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}      => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}       => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE} => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
##      lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {type=fish}                      => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE}      => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE}     => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE}           => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE}              => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE}         => {fins=TRUE} 0.1287129 0.8125000
## [10] {venomous=FALSE,legs=FALSE}         => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1683168 0.7391304

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## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}   => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}   => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}     => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}          => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}     => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}          => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}     => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}        => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}      => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}   => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}       => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}  => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                   => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}      => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [64] {milk=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2162162

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## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846
## [51] 1.540305
## [52] 1.536511

```

```

## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE}  => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}   => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}        => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}       => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE}   => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}   => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE}   => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}       => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}        => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}      => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE}   => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE}  => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}    => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE}  => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}    => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE}   => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}        => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}        => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE}  => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}    => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}       => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}    => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}    => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift

```

```

## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218

##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE}   => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE}  => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE}     => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852

##      lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218

##      lhs                                rhs      support  confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE}      => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE}  => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.2162162

##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175
## [9] 1.553846
## [10] 1.338857

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## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}    => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}  => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}   => {fins=TRUE} 0.1287129 0.3513514
## [3] {eggs=TRUE,tail=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE}  => {fins=TRUE} 0.1287129 0.3333333

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## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230
## [8] 1.425882
## lhs rhs support confidence

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## [1] {hair=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE}      => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE}   => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE}       => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE}      => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE}   => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
## lhs rhs support confidence
## [1] {aquatic=TRUE,legs=FALSE}      => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
## lift
## [1] 5.281046
## [2] 4.391304
## [3] 3.861765

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## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {aquatic=TRUE,catsize=TRUE}      => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE}        => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE}    => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE}          => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE}      => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE}         => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE}       => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE}                  => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE}                    => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE}         => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE}          => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE}        => {predator=TRUE} 0.1683168
## [14] {fins=TRUE}                       => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE}          => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE}           => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE}        => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE}        => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}        => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE}         => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE}    => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE}      => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE}      => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE}     => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE}        => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE}                     => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE}    => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE}     => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE}         => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE}        => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE}        => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE}         => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}     => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}             => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}         => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}          => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}         => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}              => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                   => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                      => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}        => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                       => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                       => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                   => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357

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## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}   => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}       => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}      => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}      => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}       => {predator=FALSE} 0.2574257 0.4406780 0.9890772

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## [12] {milk=FALSE}      => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}    => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                                rhs                support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                                rhs                support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                                rhs                support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                                rhs                support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}  => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}   => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}       => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                                rhs                support  confidence
## [1] {milk=FALSE,toothed=TRUE}   => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}       => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}  => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs                support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}  => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}       => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036

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## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE} => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE} => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE} => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE} => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE} => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139

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## [27] {eggs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}        => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}          => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}    => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}     => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                    => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}    => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}    => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}     => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343

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## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}     => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109

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##      confidence lift
## [1] 0.6875000  3.857639
## [2] 0.4000000  2.244444
## [3] 0.3793103  2.128352
## [4] 0.3529412  1.980392
## [5] 0.2352941  1.320261
## [6] 0.2075472  1.164570
##      lhs                                     rhs               support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000  5.050000
## [2] 0.4500000  2.525000
## [3] 0.4358974  2.445869
## [4] 0.3953488  2.218346
## [5] 0.3684211  2.067251
## [6] 0.2812500  1.578125
## [7] 0.2413793  1.354406
## [8] 0.2394366  1.343505
## [9] 0.2352941  1.320261
##      lhs                                     rhs               support   confidence
## [1] {eggs=TRUE,tail=FALSE}    => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE} => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}     => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}  => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
##      lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
##      lhs                                     rhs               support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158

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## [9] {legs=TRUE,catsize=FALSE}      => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}      => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support  confidence
## [1] {type=fish}                        => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE}              => {legs=FALSE} 0.1485149 1.0000000
## [3] {eggs=TRUE,fins=TRUE}               => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}              => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE}       => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}          => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE}     => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                        => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}           => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}                  => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}          => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}           => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}         => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}           => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE}       => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE}       => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}         => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}         => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}           => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}         => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}          => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}         => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}          => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE}       => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}          => {legs=FALSE} 0.1584158 0.4444444

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## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE} => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE} => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE} => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE} => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE} => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211
## lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652

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## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}      => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE} => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE} => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}      => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}      => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}    => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}  => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}   => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}      => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}  => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE} => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}   => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}      => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE} => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}       => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}   => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE} => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}    => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}       => {legs=TRUE} 0.3960396 0.6779661 0.8778792

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## [20] {milk=FALSE}      => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}     => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                      rhs          support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}    => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}   => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                      rhs          support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
##      lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE}    => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE}     => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE}      => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE}  => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE}  => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
##      lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994

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## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE}    => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE}     => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE}   => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
##      lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE}      => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE}    => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE}    => {legs=FALSE} 0.1881188 0.4871795
## [5] {eggs=TRUE,predator=TRUE}     => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}          => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE}     => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
##      lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}        => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE}      => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE}    => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE}    => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE}     => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE}          => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE}     => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE}    => {legs=FALSE} 0.1881188 0.3454545
##      lift

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## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE}      => {legs=FALSE} 0.1683168 0.5312500
##      lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                        => {toothed=TRUE} 0.1287129
## [2] {fins=TRUE}                        => {toothed=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}         => {toothed=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {toothed=TRUE} 0.1386139
## [5] {legs=FALSE,tail=TRUE}             => {toothed=TRUE} 0.1782178
## [6] {backbone=TRUE,legs=FALSE}         => {toothed=TRUE} 0.1881188
## [7] {eggs=FALSE,backbone=TRUE}         => {toothed=TRUE} 0.4059406
## [8] {eggs=FALSE}                      => {toothed=TRUE} 0.4059406
## [9] {hair=TRUE,backbone=TRUE}          => {toothed=TRUE} 0.3762376
## [10] {hair=TRUE,airborne=FALSE}         => {toothed=TRUE} 0.3564356
## [11] {hair=TRUE,tail=TRUE}              => {toothed=TRUE} 0.3168317
## [12] {feathers=FALSE,backbone=TRUE}     => {toothed=TRUE} 0.6039604
## [13] {hair=TRUE,predator=TRUE}          => {toothed=TRUE} 0.1881188
## [14] {feathers=FALSE,tail=TRUE}         => {toothed=TRUE} 0.5148515
## [15] {feathers=FALSE,catsize=TRUE}      => {toothed=TRUE} 0.3465347
## [16] {airborne=FALSE,backbone=TRUE}     => {toothed=TRUE} 0.5841584
## [17] {airborne=FALSE,tail=TRUE}         => {toothed=TRUE} 0.4950495
## [18] {airborne=FALSE,catsize=TRUE}      => {toothed=TRUE} 0.3465347
## [19] {venomous=FALSE,legs=FALSE}        => {toothed=TRUE} 0.1584158
## [20] {legs=FALSE}                      => {toothed=TRUE} 0.1881188
## [21] {backbone=TRUE,catsize=TRUE}       => {toothed=TRUE} 0.3465347
## [22] {feathers=FALSE,airborne=FALSE}    => {toothed=TRUE} 0.5841584
## [23] {airborne=FALSE,breathes=TRUE}     => {toothed=TRUE} 0.4455446
## [24] {catsize=TRUE}                    => {toothed=TRUE} 0.3465347
## [25] {feathers=FALSE,predator=TRUE}     => {toothed=TRUE} 0.3663366
## [26] {predator=TRUE,backbone=TRUE}      => {toothed=TRUE} 0.3663366
## [27] {airborne=FALSE,predator=FALSE}    => {toothed=TRUE} 0.2178218
## [28] {feathers=FALSE,breathes=TRUE}     => {toothed=TRUE} 0.4653465
## [29] {airborne=FALSE,aquatic=FALSE}     => {toothed=TRUE} 0.3564356
## [30] {feathers=FALSE,venomous=FALSE}    => {toothed=TRUE} 0.5643564
## [31] {airborne=FALSE,venomous=FALSE}    => {toothed=TRUE} 0.5445545
## [32] {feathers=FALSE,aquatic=TRUE}      => {toothed=TRUE} 0.2277228

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## [33] {aquatic=TRUE,backbone=TRUE}    => {toothed=TRUE} 0.2277228
## [34] {feathers=FALSE}                  => {toothed=TRUE} 0.6039604
## [35] {predator=TRUE,tail=TRUE}         => {toothed=TRUE} 0.3069307
## [36] {aquatic=TRUE,tail=TRUE}          => {toothed=TRUE} 0.1881188
## [37] {aquatic=FALSE,predator=TRUE}     => {toothed=TRUE} 0.1881188
## [38] {tail=TRUE}                       => {toothed=TRUE} 0.5148515
## [39] {predator=TRUE,breathes=TRUE}     => {toothed=TRUE} 0.2673267
## [40] {breathes=FALSE}                  => {toothed=TRUE} 0.1386139
## [41] {predator=TRUE}                   => {toothed=TRUE} 0.3663366
## [42] {aquatic=TRUE}                    => {toothed=TRUE} 0.2277228
## [43] {domestic=FALSE}                  => {toothed=TRUE} 0.5148515
## [44] {breathes=TRUE}                   => {toothed=TRUE} 0.4653465
## [45] {predator=FALSE}                  => {toothed=TRUE} 0.2376238
## [46] {catsize=FALSE}                   => {toothed=TRUE} 0.2574257
## [47] {hair=FALSE}                      => {toothed=TRUE} 0.2277228
## [48] {eggs=TRUE}                       => {toothed=TRUE} 0.1980198
##      confidence lift
## [1] 1.0000000 1.6557377
## [2] 1.0000000 1.6557377
## [3] 1.0000000 1.6557377
## [4] 1.0000000 1.6557377
## [5] 1.0000000 1.6557377
## [6] 1.0000000 1.6557377
## [7] 1.0000000 1.6557377
## [8] 0.9761905 1.6163154
## [9] 0.9743590 1.6132829
## [10] 0.9729730 1.6109880
## [11] 0.9696970 1.6055638
## [12] 0.9682540 1.6031746
## [13] 0.9500000 1.5729508
## [14] 0.9454545 1.5654247
## [15] 0.9210526 1.5250216
## [16] 0.9076923 1.5029004
## [17] 0.8771930 1.4524015
## [18] 0.8536585 1.4134346
## [19] 0.8421053 1.3943054
## [20] 0.8260870 1.3677833
## [21] 0.8139535 1.3476935
## [22] 0.8082192 1.3381990
## [23] 0.8035714 1.3305035
## [24] 0.7954545 1.3170641
## [25] 0.7872340 1.3034531
## [26] 0.7872340 1.3034531
## [27] 0.7857143 1.3009368
## [28] 0.7833333 1.2969945
## [29] 0.7826087 1.2957947
## [30] 0.7808219 1.2928363
## [31] 0.7746479 1.2826137
## [32] 0.7666667 1.2693989
## [33] 0.7666667 1.2693989
## [34] 0.7530864 1.2469136
## [35] 0.7380952 1.2220921
## [36] 0.7307692 1.2099622
## [37] 0.7037037 1.1651488

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## [38] 0.6933333 1.1479781
## [39] 0.6923077 1.1462799
## [40] 0.6666667 1.1038251
## [41] 0.6607143 1.0939696
## [42] 0.6388889 1.0578324
## [43] 0.5909091 0.9783905
## [44] 0.5875000 0.9727459
## [45] 0.5333333 0.8830601
## [46] 0.4561404 0.7552488
## [47] 0.3965517 0.6565856
## [48] 0.3389831 0.5612670

##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198 1.0000000 2.5250000
## [3] {tail=FALSE}    => {toothed=FALSE} 0.1683168 0.6538462 1.6509615
## [4] {milk=FALSE}     => {toothed=FALSE} 0.3861386 0.6500000 1.6412500
## [5] {catsize=FALSE}  => {toothed=FALSE} 0.3069307 0.5438596 1.3732456
## [6] {predator=TRUE} => {toothed=FALSE} 0.1881188 0.3392857 0.8566964

##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.9500000
## [2] {feathers=FALSE,predator=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [3] {predator=TRUE,backbone=TRUE} => {toothed=TRUE} 0.3663366 0.7872340
## [4] {predator=TRUE,tail=TRUE}    => {toothed=TRUE} 0.3069307 0.7380952
## [5] {aquatic=FALSE,predator=TRUE} => {toothed=TRUE} 0.1881188 0.7037037
## [6] {predator=TRUE,breathes=TRUE} => {toothed=TRUE} 0.2673267 0.6923077

##      lift
## [1] 1.572951
## [2] 1.303453
## [3] 1.303453
## [4] 1.222092
## [5] 1.165149
## [6] 1.146280

## [1] "Número de reglas con consecuente negado"

##      lhs                      rhs      support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE}     => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}   => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}              => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}   => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}     => {backbone=FALSE} 0.1089109

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## [21] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE} => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE} => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}  => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}  => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                 => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE} => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}  => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}   => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}             => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691

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## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}     => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}  => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                      rhs      support

```



```

## [1] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}      => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}       => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE}  => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
## lhs rhs support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}     => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}      => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE}  => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
## lhs rhs support confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}   => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}   => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}      => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}    => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}       => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}   => {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}   => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168

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## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE}      => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE}       => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
##      lhs                                rhs                                support
## [1] {toothed=FALSE,tail=FALSE}           => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE}         => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE}          => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE}          => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE}             => {backbone=FALSE} 0.1782178
##      confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support    confidence
## [1] {hair=TRUE,eggs=FALSE}                => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}              => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}            => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}            => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}                => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}               => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}               => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}                  => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}              => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}              => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}             => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}            => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}                 => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}              => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}            => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}              => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}             => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}                => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}            => {milk=TRUE} 0.3960396 0.8510638

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## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}     => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}  => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}      => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}  => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}   => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE}  => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}     => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE}  => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}      => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE}  => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE}  => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}      => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}    => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}     => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}      => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE}  => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE}  => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}      => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}     => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}              => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}               => {milk=TRUE} 0.2178218 0.3928571

```

```
##      lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
```

```

## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}       => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}        => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}    => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}    => {milk=TRUE} 0.3168317 0.5423729

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```

## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence

```

```

## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catsize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE} => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE} => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168

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## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## [32] {feathers=FALSE,eggs=TRUE} => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE} => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE} => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE} => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE} => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE} => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119
## [42] {legs=TRUE} => {predator=TRUE} 0.3861386
## [43] {hair=TRUE} => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE} => {predator=TRUE} 0.2673267
## confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226

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## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701
## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs      support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE} => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE} => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE} => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}     => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs      support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs      support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}     => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE}   => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}    => {predator=TRUE} 0.2376238 0.6153846

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## [4] {eggs=TRUE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}      => {predator=TRUE} 0.2277228 0.5897436
## lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
## lhs rhs support confidence
## [1] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE} => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE} => {predator=TRUE} 0.2475248 0.5952381
## lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232
## [4] 1.082143
## [5] 1.073554
## lhs rhs support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208
## confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
## lhs rhs support confidence
## [1] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
## lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381

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##      lhs                                rhs                support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}    => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support  confidence lift
## [1] {milk=TRUE}                      => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [2] {type=mammal}                    => {venomous=FALSE} 0.4059406 1.0000000 1.0860215
## [3] {catsize=TRUE}                  => {venomous=FALSE} 0.4257426 0.9772727 1.0613392
## [4] {predator=FALSE}                => {venomous=FALSE} 0.4257426 0.9555556 1.0377539
## [5] {hair=TRUE}                     => {venomous=FALSE} 0.4059406 0.9534884 1.0355089
## [6] {eggs=FALSE}                    => {venomous=FALSE} 0.3960396 0.9523810 1.0343062
## [7] {backbone=TRUE}                 => {venomous=FALSE} 0.7821782 0.9518072 1.0336831
## [8] {legs=TRUE}                      => {venomous=FALSE} 0.7326733 0.9487179 1.0303281
## [9] {tail=TRUE}                     => {venomous=FALSE} 0.7029703 0.9466667 1.0281004
## [10] {fins=TRUE}                      => {venomous=FALSE} 0.1584158 0.9411765 1.0221379
## [11] {aquatic=FALSE}                 => {venomous=FALSE} 0.6039604 0.9384615 1.0191894
## [12] {breathes=TRUE}                 => {venomous=FALSE} 0.7425743 0.9375000 1.0181452
## [13] {toothed=TRUE}                   => {venomous=FALSE} 0.5643564 0.9344262 1.0148070
## [14] {domestic=TRUE}                 => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [15] {type=fish}                      => {venomous=FALSE} 0.1188119 0.9230769 1.0024814
## [16] {airborne=FALSE}                 => {venomous=FALSE} 0.7029703 0.9220779 1.0013965
## [17] {domestic=FALSE}                 => {venomous=FALSE} 0.8019802 0.9204545 0.9996334
## [18] {feathers=FALSE}                 => {venomous=FALSE} 0.7227723 0.9012346 0.9787601
## [19] {toothed=FALSE}                  => {venomous=FALSE} 0.3564356 0.9000000 0.9774194
## [20] {eggs=TRUE}                     => {venomous=FALSE} 0.5247525 0.8983051 0.9755786
## [21] {hair=FALSE}                    => {venomous=FALSE} 0.5148515 0.8965517 0.9736745
## [22] {predator=TRUE}                  => {venomous=FALSE} 0.4950495 0.8928571 0.9696621
## [23] {catsize=FALSE}                  => {venomous=FALSE} 0.4950495 0.8771930 0.9526504
## [24] {milk=FALSE}                    => {venomous=FALSE} 0.5148515 0.8666667 0.9412186
## [25] {breathes=FALSE}                 => {venomous=FALSE} 0.1782178 0.8571429 0.9308756
## [26] {legs=FALSE}                     => {venomous=FALSE} 0.1881188 0.8260870 0.8971482
## [27] {backbone=FALSE}                => {venomous=FALSE} 0.1386139 0.7777778 0.8446834
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                support
## [1] {domestic=TRUE}                  => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE}          => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE}                    => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE}      => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE}         => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE}      => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE}          => {predator=FALSE} 0.1881188
## [9] {toothed=FALSE,breathes=TRUE}      => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE}         => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE}         => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE}      => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE}     => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE}          => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE}         => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE}          => {predator=FALSE} 0.2277228
## [17] {type=bird}                        => {predator=FALSE} 0.1089109

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## [18] {feathers=TRUE} => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE} => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE} => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE} => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE} => {predator=FALSE} 0.2871287
## [29] {milk=TRUE} => {predator=FALSE} 0.1881188
## [30] {type=mammal} => {predator=FALSE} 0.1881188
## [31] {tail=FALSE} => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE} => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE} => {predator=FALSE} 0.2574257
## [34] {milk=FALSE} => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE} => {predator=FALSE} 0.3366337
## [36] {hair=FALSE} => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE} => {predator=FALSE} 0.1584158
## confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111
## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772

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## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs          support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}      => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}   => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}   => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}      => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}       => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}        => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}   => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs          support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs          support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs          support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                      rhs          support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}     => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {type=fish}                  => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}         => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}        => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}        => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}     => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}       => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}       => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1188119

```

```

## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE} => {breathes=FALSE} 0.1386139
## confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905

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## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778

```

	lhs	rhs	support	confidence	lift
## [1]	{type=bird}	=> {breathes=TRUE}	0.1980198	1.0000000	1.2625000
## [2]	{feathers=TRUE}	=> {breathes=TRUE}	0.1980198	1.0000000	1.2625000
## [3]	{airborne=TRUE}	=> {breathes=TRUE}	0.2376238	1.0000000	1.2625000
## [4]	{milk=TRUE}	=> {breathes=TRUE}	0.4059406	1.0000000	1.2625000
## [5]	{type=mammal}	=> {breathes=TRUE}	0.4059406	1.0000000	1.2625000
## [6]	{hair=TRUE}	=> {breathes=TRUE}	0.4257426	1.0000000	1.2625000
## [7]	{aquatic=FALSE}	=> {breathes=TRUE}	0.6336634	0.9846154	1.2430769
## [8]	{eggs=FALSE}	=> {breathes=TRUE}	0.4059406	0.9761905	1.2324405
## [9]	{legs=TRUE}	=> {breathes=TRUE}	0.7227723	0.9358974	1.1815705
## [10]	{domestic=TRUE}	=> {breathes=TRUE}	0.1188119	0.9230769	1.1653846
## [11]	{predator=FALSE}	=> {breathes=TRUE}	0.4059406	0.9111111	1.1502778
## [12]	{catsize=TRUE}	=> {breathes=TRUE}	0.3861386	0.8863636	1.1190341
## [13]	{toothed=FALSE}	=> {breathes=TRUE}	0.3267327	0.8250000	1.0415625
## [14]	{tail=TRUE}	=> {breathes=TRUE}	0.6039604	0.8133333	1.0268333
## [15]	{domestic=FALSE}	=> {breathes=TRUE}	0.6732673	0.7727273	0.9755682
## [16]	{tail=FALSE}	=> {breathes=TRUE}	0.1881188	0.7307692	0.9225962
## [17]	{airborne=FALSE}	=> {breathes=TRUE}	0.5544554	0.7272727	0.9181818
## [18]	{catsize=FALSE}	=> {breathes=TRUE}	0.4059406	0.7192982	0.9081140
## [19]	{predator=TRUE}	=> {breathes=TRUE}	0.3861386	0.6964286	0.8792411
## [20]	{eggs=TRUE}	=> {breathes=TRUE}	0.3861386	0.6610169	0.8345339
## [21]	{milk=FALSE}	=> {breathes=TRUE}	0.3861386	0.6500000	0.8206250
## [22]	{backbone=FALSE}	=> {breathes=TRUE}	0.1089109	0.6111111	0.7715278

```

##      lhs                                rhs                                support
## [1] {hair=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}      => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}       => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE}   => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}     => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                                rhs                                support
## [1] {airborne=FALSE,aquatic=TRUE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}       => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}        => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}        => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}    => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}        => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}       => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}          => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}        => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158

```



```

## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824  3.394958
## [2] 0.5000000  2.404762
## [3] 0.4848485  2.331890
## [4] 0.4722222  2.271164
## [5] 0.4285714  2.061224
## [6] 0.3617021  1.739615
## [7] 0.3469388  1.668610
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,fins=TRUE}                => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}                 => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}               => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}              => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}              => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}              => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}                 => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}             => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,fins=TRUE}                => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}                 => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}               => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}               => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}              => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}              => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}              => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}                 => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}             => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support

```

```

## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198

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```

## [55] {backbone=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}      => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE}  => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}      => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                 => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000

```

##	[28]	0.5000000	2.5250000		
##	[29]	0.4827586	2.4379310		
##	[30]	0.4761905	2.4047619		
##	[31]	0.4761905	2.4047619		
##	[32]	0.4761905	2.4047619		
##	[33]	0.4666667	2.3566667		
##	[34]	0.4651163	2.3488372		
##	[35]	0.4545455	2.2954545		
##	[36]	0.4347826	2.1956522		
##	[37]	0.4255319	2.1489362		
##	[38]	0.4230769	2.1365385		
##	[39]	0.4230769	2.1365385		
##	[40]	0.3846154	1.9423077		
##	[41]	0.3846154	1.9423077		
##	[42]	0.3783784	1.9108108		
##	[43]	0.3773585	1.9056604		
##	[44]	0.3703704	1.8703704		
##	[45]	0.3571429	1.8035714		
##	[46]	0.3508772	1.7719298		
##	[47]	0.3500000	1.7675000		
##	[48]	0.3448276	1.7413793		
##	[49]	0.3448276	1.7413793		
##	[50]	0.3414634	1.7243902		
##	[51]	0.3414634	1.7243902		
##	[52]	0.3389831	1.7118644		
##	[53]	0.3333333	1.6833333		
##	[54]	0.3278689	1.6557377		
##	[55]	0.3125000	1.5781250		
##	[56]	0.3055556	1.5430556		
##	[57]	0.3030303	1.5303030		
##	[58]	0.2916667	1.4729167		
##	[59]	0.2898551	1.4637681		
##	[60]	0.2857143	1.4428571		
##	[61]	0.2820513	1.4243590		
##	[62]	0.2816901	1.4225352		
##	[63]	0.2800000	1.4140000		
##	[64]	0.2739726	1.3835616		
##	[65]	0.2702703	1.3648649		
##	[66]	0.2702703	1.3648649		
##	[67]	0.2682927	1.3548780		
##	[68]	0.2682927	1.3548780		
##	[69]	0.2666667	1.3466667		
##	[70]	0.2641509	1.3339623		
##	[71]	0.2631579	1.3289474		
##	[72]	0.2597403	1.3116883		
##	[73]	0.2597403	1.3116883		
##	[74]	0.2575758	1.3007576		
##	[75]	0.2558140	1.2918605		
##	[76]	0.2531646	1.2784810		
##	[77]	0.2295082	1.1590164		
##	[78]	0.2153846	1.0876923		
##	[79]	0.2150538	1.0860215		
##	[80]	0.1931818	0.9755682		
##	lhs	rhs	support	confidence	lift

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## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}      => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}     => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}     => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}     => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}      => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}  => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}   => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}      => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}     => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}      => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}     => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE} => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}      => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}       => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333

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## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs      support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703

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## [11] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
## lhs      rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs      rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198 0.3448276

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## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379

## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429

## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571

## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198

## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304

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## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1287129
## [3] {type=bird}                    => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}       => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}       => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}           => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}          => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}      => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}          => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}         => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}      => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}         => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}           => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}       => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129

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## [44] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}    => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}   => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}       => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}              => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}             => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957

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## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}     => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}       => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}        => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}      => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}     => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}    => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}     => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}        => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}    => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}       => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}        => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}    => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}       => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE}   => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}       => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}        => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE}   => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}    => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs      support  confidence

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## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}     => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs rhs support confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198 0.3846154

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## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs rhs support confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catSize=FALSE} => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857

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## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}    => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE} => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE} => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE} => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE} => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE} => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE} => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE} => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE} => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139
## [32] {type=bird} => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE} => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE} => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE} => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE} => {catsize=FALSE} 0.2277228

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## [38] {fins=FALSE,domestic=FALSE}      => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE}                    => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE}                  => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE}                      => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE}                     => {catsize=FALSE} 0.1089109
##      confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769
##      lhs      rhs      support  confidence lift
## [1] {milk=TRUE}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}     => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}      => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE}  => {catsize=TRUE} 0.3069307 0.4769231 1.0947552

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## [6] {aquatic=TRUE} => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}   => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}   => {catsize=TRUE} 0.1188119 0.2000000 0.4590909
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}  => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.305633
## [2] 1.181287
##      lhs                      rhs          support  confidence
## [1] {hair=FALSE,tail=FALSE}   => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}    => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}     => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,tail=FALSE}   => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}    => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}  => {catsize=FALSE} 0.1683168 0.8095238
##      lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
##      lhs                      rhs          support
## [1] {milk=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}   => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}     => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297

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## [6] {milk=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}    => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                     => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                   => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}       => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}          => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                   => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}     => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                     => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}    => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}       => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}   => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}   => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}      => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}  => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}  => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}       => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}  => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}  => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}      => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}          => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}      => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}      => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}      => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}     => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}         => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE}=> {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                => {catsize=TRUE} 0.3069307

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## [60] {aquatic=TRUE}          => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}             => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}             => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865

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## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs      rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}      => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}      => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE} => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}      => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}   => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}      => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}    => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}   => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}     => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs      rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}     => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}    => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149

##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986

##      lhs      rhs      support  confidence

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## [1] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE}  => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327 0.5500000
## lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
## lhs                                rhs                                support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}      => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}           => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238 0.7058824
## lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
## lhs                                rhs                                support  confidence
## [1] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307 0.7560976
## lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
## lhs                                rhs                                support
## [1] {type=bird}                      => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}        => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}     => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}     => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}         => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}        => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}    => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}        => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198

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## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE} => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE} => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE} => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catSize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109

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## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}      => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}         => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}        => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}         => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}    => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                   => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                   => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                   => {feathers=TRUE} 0.1683168
##      confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077

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## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667
## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}       => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}      => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476

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## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}   => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}       => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}      => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}       => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE}           => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}             => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}            => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}              => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}          => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE}        => {feathers=TRUE} 0.1386139 0.2295082
##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE}       => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}            => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}           => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}           => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE}      => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs      support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}             => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.2800000
##      lift

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## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000

##      lhs                                rhs                support
## [1] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}     => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}   => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}      => {feathers=TRUE} 0.1980198

##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947

##      lhs                                rhs                support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758

##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865

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## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE}  => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379

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##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}      => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
##      lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
##      lhs                                rhs      support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE}  => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE}  => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE}   => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1287129

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## [3] {type=bird} => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE} => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE} => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catSize=FALSE} => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catSize=FALSE} => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE} => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE} => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE} => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catSize=FALSE} => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE} => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catSize=FALSE} => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catSize=FALSE} => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catSize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catSize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE} => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE} => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE} => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE} => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE} => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE} => {airborne=TRUE} 0.1782178

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## [57] {aquatic=FALSE}          => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}         => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973
## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616

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## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}      => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}    => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}   => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}     => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}       => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175

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## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs            support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1881188 0.3166667
##      lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}         => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178 0.3461538
##      lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
##      lhs                                rhs            support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}    => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}         => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}          => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {airborne=TRUE} 0.1683168 0.5862069

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## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}      => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}     => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301

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## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {type=fish}                            => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE}                  => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE}                  => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE}               => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE}                  => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE}                => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE}                 => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE}                 => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE}              => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE}                  => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE}             => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE}                  => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE}                  => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE}               => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE}                 => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE}               => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE}                => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE}               => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE}               => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE}                => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE}                 => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE}                => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE}             => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE}                   => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE}                    => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE}                => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE}               => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE}                => {breathes=FALSE} 0.1881188
## [40] {airborne=FALSE,predator=TRUE}            => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}            => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE}           => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE}           => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}             => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                               => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238

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## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778
##      lhs                      rhs      support  confidence lift
## [1] {type=bird}      => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}   => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}   => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}        => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}      => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}        => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}    => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}       => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}        => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}    => {breathes=TRUE} 0.1188119 0.9230769 1.1653846

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## [11] {predator=FALSE} => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}    => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}   => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}       => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}  => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}      => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE} => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}   => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}   => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}        => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}      => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE} => {breathes=TRUE} 0.1089109 0.6111111 0.7715278

##      lhs                                rhs      support
## [1] {hair=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}    => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}      => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129

##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381

##      lhs                                rhs      support
## [1] {airborne=FALSE,aquatic=TRUE}  => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}      => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}      => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208

##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566
## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562

##      lhs                                rhs      support
## [1] {legs=FALSE,catsize=FALSE}     => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}     => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE}    => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}        => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1485149

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```

##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}       => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}      => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}            => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}          => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}          => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}         => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}          => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}            => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}        => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305
## [9] 1.692240
##      lhs                                rhs                                support  confidence
## [1] {milk=FALSE,fins=TRUE}            => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}            => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}          => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE}          => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE}         => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE}        => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE}          => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}            => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE}        => {breathes=FALSE} 0.1980198 0.3636364

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```

## lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE} => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE} => {feathers=TRUE} 0.1386139

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## [43] {eggs=TRUE,venomous=FALSE}      => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}           => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}          => {feathers=TRUE} 0.1980198
## [46] {legs=TRUE,tail=TRUE}            => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                     => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}           => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}        => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}           => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}       => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}    => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}        => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE}   => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}        => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}        => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}       => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE}   => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}       => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}           => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}       => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE}  => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}   => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE}   => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                  => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}                 => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}                 => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556

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## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381
## [19] 0.5185185 2.6185185
## [20] 0.5128205 2.5897436
## [21] 0.5128205 2.5897436
## [22] 0.5128205 2.5897436
## [23] 0.5128205 2.5897436
## [24] 0.5128205 2.5897436
## [25] 0.5000000 2.5250000
## [26] 0.5000000 2.5250000
## [27] 0.5000000 2.5250000
## [28] 0.5000000 2.5250000
## [29] 0.4827586 2.4379310
## [30] 0.4761905 2.4047619
## [31] 0.4761905 2.4047619
## [32] 0.4761905 2.4047619
## [33] 0.4666667 2.3566667
## [34] 0.4651163 2.3488372
## [35] 0.4545455 2.2954545
## [36] 0.4347826 2.1956522
## [37] 0.4255319 2.1489362
## [38] 0.4230769 2.1365385
## [39] 0.4230769 2.1365385
## [40] 0.3846154 1.9423077
## [41] 0.3846154 1.9423077
## [42] 0.3783784 1.9108108
## [43] 0.3773585 1.9056604
## [44] 0.3703704 1.8703704
## [45] 0.3571429 1.8035714
## [46] 0.3508772 1.7719298
## [47] 0.3500000 1.7675000
## [48] 0.3448276 1.7413793
## [49] 0.3448276 1.7413793
## [50] 0.3414634 1.7243902
## [51] 0.3414634 1.7243902
## [52] 0.3389831 1.7118644
## [53] 0.3333333 1.6833333
## [54] 0.3278689 1.6557377
## [55] 0.3125000 1.5781250
## [56] 0.3055556 1.5430556
## [57] 0.3030303 1.5303030
## [58] 0.2916667 1.4729167
## [59] 0.2898551 1.4637681
## [60] 0.2857143 1.4428571
## [61] 0.2820513 1.4243590
## [62] 0.2816901 1.4225352
## [63] 0.2800000 1.4140000
## [64] 0.2739726 1.3835616
## [65] 0.2702703 1.3648649
## [66] 0.2702703 1.3648649
## [67] 0.2682927 1.3548780
## [68] 0.2682927 1.3548780
## [69] 0.2666667 1.3466667

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## [70] 0.2641509 1.3339623
## [71] 0.2631579 1.3289474
## [72] 0.2597403 1.3116883
## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}      => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}     => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}     => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}    => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}      => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE} => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}   => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}  => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}  => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}  => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE} => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE} => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}  => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}     => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}     => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}      => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}    => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE} => {feathers=FALSE} 0.1980198 0.5000000 0.6234568

##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}    => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}   => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082

##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016

##      lhs                      rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}     => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}    => {feathers=TRUE} 0.1089109

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## [5] {predator=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [8] {predator=FALSE,breathes=TRUE}  => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}              => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                support
## [1] {toothed=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}               => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}              => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}               => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}                => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}          => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}         => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}            => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667

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## [11] 0.2631579 1.328947
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [2] {hair=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}    => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE} => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
##      lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}   => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
##      lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
##      lhs                                rhs      support  confidence

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```

## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE} => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE} => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE} => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs rhs support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE} => {feathers=TRUE} 0.1980198

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## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [6] {toothed=FALSE,legs=TRUE} => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198
## confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {aquatic=TRUE,catsize=TRUE} => {predator=TRUE} 0.1188119
## [2] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [3] {aquatic=TRUE,fins=FALSE} => {predator=TRUE} 0.1584158
## [4] {airborne=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2574257
## [5] {aquatic=TRUE,legs=TRUE} => {predator=TRUE} 0.1485149
## [6] {feathers=FALSE,aquatic=TRUE} => {predator=TRUE} 0.2475248
## [7] {fins=TRUE,domestic=FALSE} => {predator=TRUE} 0.1287129
## [8] {aquatic=TRUE,breathes=TRUE} => {predator=TRUE} 0.1287129
## [9] {breathes=FALSE} => {predator=TRUE} 0.1683168
## [10] {aquatic=TRUE} => {predator=TRUE} 0.2871287
## [11] {backbone=TRUE,legs=FALSE} => {predator=TRUE} 0.1485149
## [12] {hair=FALSE,toothed=TRUE} => {predator=TRUE} 0.1782178
## [13] {legs=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [14] {fins=TRUE} => {predator=TRUE} 0.1287129
## [15] {milk=FALSE,toothed=TRUE} => {predator=TRUE} 0.1584158
## [16] {eggs=TRUE,toothed=TRUE} => {predator=TRUE} 0.1485149
## [17] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287
## [18] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267
## [20] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257
## [21] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [22] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257
## [23] {toothed=TRUE,domestic=FALSE} => {predator=TRUE} 0.3465347
## [24] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119
## [25] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356
## [26] {catsize=TRUE} => {predator=TRUE} 0.2772277
## [27] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [28] {backbone=TRUE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [29] {tail=TRUE,domestic=FALSE} => {predator=TRUE} 0.4059406
## [30] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248
## [31] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208

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## [32] {feathers=FALSE,eggs=TRUE}      => {predator=TRUE} 0.2376238
## [33] {feathers=FALSE,backbone=TRUE}  => {predator=TRUE} 0.3762376
## [34] {milk=FALSE,tail=TRUE}          => {predator=TRUE} 0.2376238
## [35] {feathers=FALSE,tail=TRUE}      => {predator=TRUE} 0.3267327
## [36] {eggs=TRUE,backbone=TRUE}       => {predator=TRUE} 0.2475248
## [37] {milk=FALSE,backbone=TRUE}      => {predator=TRUE} 0.2475248
## [38] {eggs=TRUE,tail=TRUE}           => {predator=TRUE} 0.2277228
## [39] {backbone=TRUE}                 => {predator=TRUE} 0.4653465
## [40] {eggs=FALSE}                    => {predator=TRUE} 0.2277228
## [41] {venomous=FALSE,tail=FALSE}     => {predator=TRUE} 0.1188119
## [42] {legs=TRUE}                     => {predator=TRUE} 0.3861386
## [43] {hair=TRUE}                     => {predator=TRUE} 0.1980198
## [44] {aquatic=FALSE}                 => {predator=TRUE} 0.2673267
##      confidence lift
## [1] 0.9230769 1.6648352
## [2] 0.8500000 1.5330357
## [3] 0.8421053 1.5187970
## [4] 0.8387097 1.5126728
## [5] 0.8333333 1.5029762
## [6] 0.8333333 1.5029762
## [7] 0.8125000 1.4654018
## [8] 0.8125000 1.4654018
## [9] 0.8095238 1.4600340
## [10] 0.8055556 1.4528770
## [11] 0.7894737 1.4238722
## [12] 0.7826087 1.4114907
## [13] 0.7727273 1.3936688
## [14] 0.7647059 1.3792017
## [15] 0.7619048 1.3741497
## [16] 0.7500000 1.3526786
## [17] 0.7250000 1.3075893
## [18] 0.7105263 1.2814850
## [19] 0.7105263 1.2814850
## [20] 0.7027027 1.2673745
## [21] 0.6911765 1.2465861
## [22] 0.6842105 1.2340226
## [23] 0.6730769 1.2139423
## [24] 0.6666667 1.2023810
## [25] 0.6666667 1.2023810
## [26] 0.6363636 1.1477273
## [27] 0.6338028 1.1431087
## [28] 0.6338028 1.1431087
## [29] 0.6307692 1.1376374
## [30] 0.6250000 1.1272321
## [31] 0.6176471 1.1139706
## [32] 0.6153846 1.1098901
## [33] 0.6031746 1.0878685
## [34] 0.6000000 1.0821429
## [35] 0.6000000 1.0821429
## [36] 0.5952381 1.0735544
## [37] 0.5952381 1.0735544
## [38] 0.5897436 1.0636447
## [39] 0.5662651 1.0212995
## [40] 0.5476190 0.9876701

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## [41] 0.5454545 0.9837662
## [42] 0.5000000 0.9017857
## [43] 0.4651163 0.8388704
## [44] 0.4153846 0.7491758
##      lhs                      rhs          support  confidence lift
## [1] {domestic=TRUE} => {predator=FALSE} 0.1089109 0.8461538 1.8991453
## [2] {airborne=TRUE} => {predator=FALSE} 0.1683168 0.7083333 1.5898148
## [3] {type=bird}      => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [4] {feathers=TRUE}  => {predator=FALSE} 0.1089109 0.5500000 1.2344444
## [5] {toothed=FALSE}  => {predator=FALSE} 0.2079208 0.5250000 1.1783333
## [6] {catsize=FALSE}  => {predator=FALSE} 0.2871287 0.5087719 1.1419103
## [7] {milk=TRUE}      => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [8] {type=mammal}    => {predator=FALSE} 0.1881188 0.4634146 1.0401084
## [9] {tail=FALSE}     => {predator=FALSE} 0.1188119 0.4615385 1.0358974
## [10] {eggs=FALSE}     => {predator=FALSE} 0.1881188 0.4523810 1.0153439
## [11] {eggs=TRUE}      => {predator=FALSE} 0.2574257 0.4406780 0.9890772
## [12] {milk=FALSE}    => {predator=FALSE} 0.2574257 0.4333333 0.9725926
## [13] {domestic=FALSE} => {predator=FALSE} 0.3366337 0.3863636 0.8671717
## [14] {hair=FALSE}     => {predator=FALSE} 0.2178218 0.3793103 0.8513410
## [15] {catsize=TRUE}   => {predator=FALSE} 0.1584158 0.3636364 0.8161616
##      lhs                      rhs          support  confidence
## [1] {airborne=FALSE,toothed=FALSE} => {predator=TRUE} 0.1188119 0.6666667
##      lift
## [1] 1.202381
##      lhs                      rhs          support  confidence
## [1] {venomous=FALSE,tail=FALSE} => {predator=TRUE} 0.1188119 0.5454545
##      lift
## [1] 0.9837662
##      lhs                      rhs          support  confidence
## [1] {eggs=FALSE,domestic=FALSE} => {predator=TRUE} 0.2079208 0.6176471
##      lift
## [1] 1.113971
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {predator=TRUE} 0.1485149 0.7500000
## [2] {eggs=TRUE,airborne=FALSE} => {predator=TRUE} 0.2574257 0.7027027
## [3] {feathers=FALSE,eggs=TRUE}  => {predator=TRUE} 0.2376238 0.6153846
## [4] {eggs=TRUE,backbone=TRUE}   => {predator=TRUE} 0.2475248 0.5952381
## [5] {eggs=TRUE,tail=TRUE}       => {predator=TRUE} 0.2277228 0.5897436
##      lift
## [1] 1.352679
## [2] 1.267375
## [3] 1.109890
## [4] 1.073554
## [5] 1.063645
##      lhs                      rhs          support  confidence
## [1] {milk=FALSE,toothed=TRUE}   => {predator=TRUE} 0.1584158 0.7619048
## [2] {milk=FALSE,airborne=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [3] {feathers=FALSE,milk=FALSE} => {predator=TRUE} 0.2475248 0.6250000
## [4] {milk=FALSE,tail=TRUE}       => {predator=TRUE} 0.2376238 0.6000000
## [5] {milk=FALSE,backbone=TRUE}  => {predator=TRUE} 0.2475248 0.5952381
##      lift
## [1] 1.374150
## [2] 1.281485
## [3] 1.127232

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## [4] 1.082143
## [5] 1.073554
##      lhs                                rhs                                support
## [1] {breathes=FALSE,domestic=FALSE} => {predator=TRUE} 0.1683168
## [2] {fins=TRUE,domestic=FALSE}      => {predator=TRUE} 0.1287129
## [3] {legs=FALSE,domestic=FALSE}     => {predator=TRUE} 0.1683168
## [4] {airborne=FALSE,domestic=FALSE} => {predator=TRUE} 0.4653465
## [5] {domestic=FALSE,catsize=TRUE}    => {predator=TRUE} 0.2574257
## [6] {toothed=TRUE,domestic=FALSE}    => {predator=TRUE} 0.3465347
## [7] {hair=FALSE,domestic=FALSE}      => {predator=TRUE} 0.3564356
## [8] {feathers=FALSE,domestic=FALSE} => {predator=TRUE} 0.4455446
## [9] {backbone=TRUE,domestic=FALSE}   => {predator=TRUE} 0.4455446
## [10] {tail=TRUE,domestic=FALSE}        => {predator=TRUE} 0.4059406
## [11] {eggs=FALSE,domestic=FALSE}    => {predator=TRUE} 0.2079208
##      confidence lift
## [1] 0.8500000 1.533036
## [2] 0.8125000 1.465402
## [3] 0.7727273 1.393669
## [4] 0.6911765 1.246586
## [5] 0.6842105 1.234023
## [6] 0.6730769 1.213942
## [7] 0.6666667 1.202381
## [8] 0.6338028 1.143109
## [9] 0.6338028 1.143109
## [10] 0.6307692 1.137637
## [11] 0.6176471 1.113971
##      lhs                                rhs                                support  confidence
## [1] {hair=FALSE,toothed=TRUE}    => {predator=TRUE} 0.1782178 0.7826087
## [2] {hair=FALSE,airborne=FALSE} => {predator=TRUE} 0.2871287 0.7250000
## [3] {hair=FALSE,feathers=FALSE} => {predator=TRUE} 0.2673267 0.7105263
## [4] {hair=FALSE,domestic=FALSE} => {predator=TRUE} 0.3564356 0.6666667
##      lift
## [1] 1.411491
## [2] 1.307589
## [3] 1.281485
## [4] 1.202381
##      lhs                                rhs                                support  confidence
## [1] {aquatic=TRUE,catsize=TRUE}  => {predator=TRUE} 0.1188119 0.9230769
## [2] {domestic=FALSE,catsize=TRUE} => {predator=TRUE} 0.2574257 0.6842105
##      lift
## [1] 1.664835
## [2] 1.234023
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {catsize=FALSE,type=bird}      => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}   => {airborne=TRUE} 0.1287129
## [3] {type=bird}                     => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                  => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}   => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188

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## [11] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}      => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}          => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}         => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}     => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}        => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}        => {airborne=TRUE} 0.1782178
## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}     => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}    => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}      => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}          => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}     => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}         => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}                => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}               => {airborne=TRUE} 0.2178218
## confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061

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##	[6]	0.7142857	3.0059524		
##	[7]	0.6956522	2.9275362		
##	[8]	0.6666667	2.8055556		
##	[9]	0.6296296	2.6496914		
##	[10]	0.6129032	2.5793011		
##	[11]	0.6111111	2.5717593		
##	[12]	0.5862069	2.4669540		
##	[13]	0.5769231	2.4278846		
##	[14]	0.5769231	2.4278846		
##	[15]	0.5666667	2.3847222		
##	[16]	0.5641026	2.3739316		
##	[17]	0.5641026	2.3739316		
##	[18]	0.5555556	2.3379630		
##	[19]	0.5500000	2.3145833		
##	[20]	0.5500000	2.3145833		
##	[21]	0.5500000	2.3145833		
##	[22]	0.5172414	2.1767241		
##	[23]	0.5121951	2.1554878		
##	[24]	0.5121951	2.1554878		
##	[25]	0.5000000	2.1041667		
##	[26]	0.5000000	2.1041667		
##	[27]	0.5000000	2.1041667		
##	[28]	0.5000000	2.1041667		
##	[29]	0.4864865	2.0472973		
##	[30]	0.4782609	2.0126812		
##	[31]	0.4680851	1.9698582		
##	[32]	0.4375000	1.8411458		
##	[33]	0.4358974	1.8344017		
##	[34]	0.4186047	1.7616279		
##	[35]	0.4146341	1.7449187		
##	[36]	0.4146341	1.7449187		
##	[37]	0.4130435	1.7382246		
##	[38]	0.4102564	1.7264957		
##	[39]	0.4054054	1.7060811		
##	[40]	0.4000000	1.6833333		
##	[41]	0.3958333	1.6657986		
##	[42]	0.3846154	1.6185897		
##	[43]	0.3823529	1.6090686		
##	[44]	0.3809524	1.6031746		
##	[45]	0.3809524	1.6031746		
##	[46]	0.3809524	1.6031746		
##	[47]	0.3800000	1.5991667		
##	[48]	0.3773585	1.5880503		
##	[49]	0.3750000	1.5781250		
##	[50]	0.3461538	1.4567308		
##	[51]	0.3287671	1.3835616		
##	[52]	0.3166667	1.3326389		
##	[53]	0.3157895	1.3289474		
##	[54]	0.3157895	1.3289474		
##	[55]	0.3116883	1.3116883		
##	[56]	0.3050847	1.2838983		
##	[57]	0.2923077	1.2301282		
##	[58]	0.2365591	0.9955197		
##	lhs	rhs	support	confidence	lift

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## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}    => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}   => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}  => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}    => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}     => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}     => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}      => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,backbone=TRUE}      => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE}  => {airborne=TRUE} 0.1485149 0.3750000
##      lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
##      lhs                                rhs      support  confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1782178 0.3050847
##      lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}      => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}     => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}      => {airborne=TRUE} 0.1287129 0.5000000

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## [6] {aquatic=FALSE,legs=TRUE}    => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs                                rhs                                support  confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731
## lhs                                rhs                                support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}      => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}   => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE}   => {airborne=TRUE} 0.1584158 0.3809524
## lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
## lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}   => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}    => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}        => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}        => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}     => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}     => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}    => {airborne=TRUE} 0.1980198 0.3773585

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## lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
## lhs rhs support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE} => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE} => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE} => {airborne=TRUE} 0.1287129
## confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885
## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
## lhs rhs support confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE} => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE} => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
## lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168

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## [5] {hair=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1584158
## [8] {aquatic=FALSE,tail=FALSE}   => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}    => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}              => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}   => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}    => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}     => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}        => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}   => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}        => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}       => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}   => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                   => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}   => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}    => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}    => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}               => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061

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## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000
## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}       => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}       => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}        => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}      => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}     => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}        => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}     => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}    => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}    => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}       => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}        => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}    => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}   => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}   => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}    => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}        => {backbone=TRUE} 0.4158416 0.7118644 0.8662446

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## [19] {catsize=FALSE} => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE} => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE} => {backbone=TRUE} 0.2178218 0.5500000 0.6692771
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs      support
## [1] {aquatic=FALSE,tail=FALSE} => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}  => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs      support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}     => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652

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## [5] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}=> {backbone=FALSE} 0.1089109 0.2972973
## [8] {eggs=TRUE,domestic=FALSE}=> {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000

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## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756

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## [58] {backbone=TRUE,fins=FALSE}      => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE}    => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE}        => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE}            => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE}         => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE}        => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE}        => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE}    => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE}    => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}        => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}                  => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}        => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}     => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                   => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}         => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}                  => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103

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## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE}    => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}        => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}       => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}      => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}     => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}      => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}      => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}      => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}        => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE}     => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}     => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}          => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE}     => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476

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## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}    => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
## lhs                                rhs            support  confidence
## [1] {eggs=FALSE,breathes=TRUE}      => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}     => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}      => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}    => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}     => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}     => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}    => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE}    => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}        => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}      => {hair=TRUE} 0.4059406 0.5394737
## lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
## lhs                                rhs            support  confidence
## [1] {milk=TRUE,legs=TRUE}             => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}             => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}             => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}           => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}            => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE}          => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE}          => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}           => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}           => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}          => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}              => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}          => {hair=TRUE} 0.4158416 0.5753425

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## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs rhs support confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {milk=TRUE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [2] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [3] {milk=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 1.0000000
## [4] {milk=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 1.0000000
## [5] {predator=FALSE,type=mammal} => {hair=TRUE} 0.1881188 1.0000000
## [6] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [7] {legs=TRUE,type=mammal} => {hair=TRUE} 0.3762376 1.0000000
## [8] {fins=FALSE,type=mammal} => {hair=TRUE} 0.3663366 1.0000000
## [9] {eggs=FALSE,predator=FALSE} => {hair=TRUE} 0.1881188 1.0000000
## [10] {eggs=FALSE,legs=TRUE} => {hair=TRUE} 0.3663366 0.9736842
## [11] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222

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## [12] {milk=TRUE} => {hair=TRUE} 0.3861386 0.9512195
## [13] {type=mammal} => {hair=TRUE} 0.3861386 0.9512195
## [14] {eggs=FALSE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.9500000
## [15] {eggs=FALSE,fins=FALSE} => {hair=TRUE} 0.3564356 0.9473684
## [16] {eggs=FALSE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.9268293
## [17] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [18] {eggs=FALSE} => {hair=TRUE} 0.3762376 0.9047619
## [19] {toothed=TRUE,legs=TRUE} => {hair=TRUE} 0.3663366 0.8809524
## [20] {aquatic=FALSE,catSize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [21] {toothed=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.8285714
## [22] {toothed=TRUE,fins=FALSE} => {hair=TRUE} 0.3564356 0.8181818
## [23] {toothed=TRUE,breathes=TRUE} => {hair=TRUE} 0.3762376 0.8085106
## [24] {predator=FALSE,toothed=TRUE} => {hair=TRUE} 0.1881188 0.7916667
## [25] {feathers=FALSE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7894737
## [26] {legs=TRUE,catSize=TRUE} => {hair=TRUE} 0.2871287 0.7837838
## [27] {fins=FALSE,catSize=TRUE} => {hair=TRUE} 0.2772277 0.7777778
## [28] {breathes=TRUE,catSize=TRUE} => {hair=TRUE} 0.2970297 0.7692308
## [29] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [30] {predator=FALSE,catSize=TRUE} => {hair=TRUE} 0.1188119 0.7500000
## [31] {feathers=FALSE,legs=TRUE} => {hair=TRUE} 0.4158416 0.7241379
## [32] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [33] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [34] {feathers=FALSE,predator=FALSE} => {hair=TRUE} 0.2277228 0.6764706
## [35] {toothed=TRUE,venomous=FALSE} => {hair=TRUE} 0.3762376 0.6666667
## [36] {airborne=FALSE,legs=TRUE} => {hair=TRUE} 0.3564356 0.6666667
## [37] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [38] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [39] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [40] {feathers=FALSE,fins=FALSE} => {hair=TRUE} 0.4059406 0.6406250
## [41] {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [42] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [43] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [44] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [45] {airborne=FALSE,predator=FALSE} => {hair=TRUE} 0.1683168 0.6071429
## [46] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## [47] {feathers=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.6000000
## [48] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [49] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [50] {airborne=FALSE,fins=FALSE} => {hair=TRUE} 0.3465347 0.5833333
## [51] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [52] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [53] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778

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## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE}      => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE}                => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE}     => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE}   => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE}                 => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE}                => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333
## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797

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## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs                rhs      support  confidence lift
## [1] {type=fish}      => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}     => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}    => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE}   => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE}  => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE}   => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}   => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}   => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}     => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE}  => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}       => {hair=FALSE} 0.3564356 0.4615385 0.8037135
## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119

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## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}    => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catsize=TRUE}   => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE} => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE} => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}       => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}  => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}      => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}    => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}           => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}            => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}          => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catsize=TRUE}           => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE}        => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}          => {hair=TRUE} 0.3861386 0.6500000
## [9] {backbone=TRUE,legs=TRUE}          => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE}         => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE}              => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE}         => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE}        => {hair=TRUE} 0.3960396 0.5405405
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882

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## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal}    => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE}      => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE}    => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE}     => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE}    => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE}   => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE}     => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE}         => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE}         => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
##      lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}      => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}     => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}   => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}   => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}       => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}      => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}       => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}          => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}     => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}      => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}    => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}    => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}     => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}   => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}     => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}     => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}        => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}   => {milk=TRUE} 0.3960396 0.8510638

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## [20] {feathers=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}    => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}      => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}     => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE} => {milk=TRUE} 0.1188119 0.7500000
## [29] {backbone=TRUE,catsize=TRUE}  => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE,breathes=TRUE} => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE,legs=TRUE}    => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE,legs=TRUE}    => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE,tail=TRUE}    => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE,predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE,legs=TRUE}     => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE,fins=FALSE}   => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE,tail=TRUE}    => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE,tail=TRUE}         => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE,tail=TRUE}     => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE,fins=FALSE}    => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE,predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE,venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE,tail=TRUE}        => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE,airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE,legs=TRUE}     => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE,tail=TRUE}    => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE,legs=TRUE}    => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}              => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE,tail=TRUE}    => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE,fins=FALSE}   => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE,venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}              => {milk=TRUE} 0.2178218 0.3928571

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```
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415
## [9] 2.463415
## [10] 2.463415
## [11] 2.403331
## [12] 2.403331
## [13] 2.398588
## [14] 2.343248
## [15] 2.268935
## [16] 2.246055
## [17] 2.181882
## [18] 2.170151
## [19] 2.096523
## [20] 2.074454
## [21] 2.066090
## [22] 2.021263
## [23] 2.015521
## [24] 1.950203
## [25] 1.930784
## [26] 1.922665
## [27] 1.915989
## [28] 1.847561
## [29] 1.833239
## [30] 1.833239
## [31] 1.767232
## [32] 1.728712
## [33] 1.715592
## [34] 1.690579
## [35] 1.683333
## [36] 1.642276
## [37] 1.626783
## [38] 1.615354
## [39] 1.613961
## [40] 1.603175
## [41] 1.567627
## [42] 1.508213
## [43] 1.495645
## [44] 1.478049
## [45] 1.463768
## [46] 1.462652
## [47] 1.459801
## [48] 1.436992
## [49] 1.436992
## [50] 1.426187
## [51] 1.426187
## [52] 1.424162
## [53] 1.413435
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## [54] 1.413435
## [55] 1.389619
## [56] 1.383562
## [57] 1.381005
## [58] 1.376614
## [59] 1.353143
## [60] 1.347180
## [61] 1.346667
## [62] 1.336089
## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}        => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}         => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}     => {milk=TRUE} 0.3168317 0.5423729

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## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
## lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719
## lhs rhs support confidence
## [1] {hair=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 1.0000000
## [2] {feathers=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.6363636
## [3] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [4] {airborne=FALSE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [5] {legs=TRUE,tail=TRUE} => {milk=TRUE} 0.3267327 0.5789474
## [6] {breathes=TRUE,tail=TRUE} => {milk=TRUE} 0.3465347 0.5737705
## [7] {fins=FALSE,tail=TRUE} => {milk=TRUE} 0.3168317 0.5423729
## [8] {predator=FALSE,tail=TRUE} => {milk=TRUE} 0.1683168 0.5151515
## [9] {venomous=FALSE,tail=TRUE} => {milk=TRUE} 0.3465347 0.4929577
## lift
## [1] 2.463415
## [2] 1.567627
## [3] 1.508213
## [4] 1.426187
## [5] 1.426187
## [6] 1.413435
## [7] 1.336089
## [8] 1.269032
## [9] 1.214359
## lhs rhs support confidence
## [1] {hair=TRUE,backbone=TRUE} => {milk=TRUE} 0.3861386 1.0000000
## [2] {eggs=FALSE,backbone=TRUE} => {milk=TRUE} 0.3960396 0.9756098
## [3] {backbone=TRUE,catsize=TRUE} => {milk=TRUE} 0.3168317 0.7441860
## [4] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [5] {feathers=FALSE,backbone=TRUE} => {milk=TRUE} 0.4059406 0.6507937
## [6] {airborne=FALSE,backbone=TRUE} => {milk=TRUE} 0.3861386 0.6000000
## [7] {backbone=TRUE,breathes=TRUE} => {milk=TRUE} 0.4059406 0.5942029
## [8] {backbone=TRUE,legs=TRUE} => {milk=TRUE} 0.3762376 0.5937500
## [9] {backbone=TRUE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5606061
## [10] {predator=FALSE,backbone=TRUE} => {milk=TRUE} 0.1881188 0.5277778
## [11] {backbone=TRUE,venomous=FALSE} => {milk=TRUE} 0.4059406 0.5189873
## lift
## [1] 2.463415
## [2] 2.403331
## [3] 1.833239
## [4] 1.626783
## [5] 1.603175
## [6] 1.478049
## [7] 1.463768
## [8] 1.462652
## [9] 1.381005
## [10] 1.300136
## [11] 1.278481
## lhs rhs support confidence

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## [1] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [2] {aquatic=FALSE,catSize=TRUE} => {milk=TRUE} 0.2574257 0.8387097
## [3] {airborne=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3267327 0.7173913
## [4] {feathers=FALSE,aquatic=FALSE} => {milk=TRUE} 0.3465347 0.6862745
## [5] {aquatic=FALSE,backbone=TRUE} => {milk=TRUE} 0.3465347 0.6603774
## [6] {aquatic=FALSE,tail=TRUE} => {milk=TRUE} 0.2970297 0.6122449
## [7] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [8] {aquatic=FALSE,legs=TRUE} => {milk=TRUE} 0.3465347 0.5833333
## [9] {aquatic=FALSE,venomous=FALSE} => {milk=TRUE} 0.3465347 0.5737705
## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catSize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {backbone=FALSE,venomous=FALSE} => {tail=FALSE} 0.1386139 1.0000000
## [2] {backbone=FALSE} => {tail=FALSE} 0.1683168 0.9444444
## [3] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [4] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## [5] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [6] {feathers=FALSE,milk=FALSE} => {tail=FALSE} 0.1980198 0.5000000
## [7] {feathers=FALSE,catSize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [8] {eggs=TRUE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4347826
## [9] {milk=FALSE,fins=FALSE} => {tail=FALSE} 0.1980198 0.4255319
## [10] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [11] {fins=FALSE,catSize=FALSE} => {tail=FALSE} 0.1980198 0.4166667
## [12] {eggs=TRUE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000
## [13] {milk=FALSE,legs=TRUE} => {tail=FALSE} 0.1584158 0.4000000

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## [14] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250
## [15] {legs=TRUE,catsize=FALSE}         => {tail=FALSE} 0.1584158 0.3902439
## [16] {airborne=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1386139 0.3888889
## [17] {eggs=TRUE,aquatic=FALSE}        => {tail=FALSE} 0.1089109 0.3793103
## [18] {eggs=TRUE,airborne=FALSE}       => {tail=FALSE} 0.1386139 0.3783784
## [19] {hair=FALSE,fins=FALSE}          => {tail=FALSE} 0.1584158 0.3720930
## [20] {milk=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3684211
## [21] {milk=FALSE,aquatic=FALSE}       => {tail=FALSE} 0.1089109 0.3666667
## [22] {feathers=FALSE,legs=TRUE}       => {tail=FALSE} 0.2079208 0.3620690
## [23] {domestic=FALSE,catsize=FALSE}   => {tail=FALSE} 0.1782178 0.3600000
## [24] {feathers=FALSE,predator=FALSE}  => {tail=FALSE} 0.1188119 0.3529412
## [25] {aquatic=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1188119 0.3529412
## [26] {hair=FALSE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3500000
## [27] {hair=FALSE,legs=TRUE}          => {tail=FALSE} 0.1188119 0.3333333
## [28] {feathers=FALSE,domestic=FALSE}  => {tail=FALSE} 0.2277228 0.3239437
## [29] {airborne=FALSE,fins=FALSE}      => {tail=FALSE} 0.1881188 0.3166667
## [30] {fins=FALSE,domestic=FALSE}     => {tail=FALSE} 0.2178218 0.3055556
## [31] {predator=TRUE,fins=FALSE}       => {tail=FALSE} 0.1287129 0.3023256
## [32] {fins=FALSE}                    => {tail=FALSE} 0.2475248 0.2976190
## [33] {predator=TRUE,legs=TRUE}        => {tail=FALSE} 0.1089109 0.2820513
## [34] {airborne=FALSE,legs=TRUE}       => {tail=FALSE} 0.1485149 0.2777778
## [35] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
## [36] {domestic=FALSE}                => {tail=FALSE} 0.2277228 0.2613636
## [37] {predator=TRUE}                 => {tail=FALSE} 0.1386139 0.2500000
## [38] {venomous=FALSE}                => {tail=FALSE} 0.2178218 0.2365591
## lift
## [1] 3.8846154
## [2] 3.6688034
## [3] 3.3019231
## [4] 2.3739316
## [5] 1.9921105
## [6] 1.9423077
## [7] 1.8067979
## [8] 1.6889632
## [9] 1.6530278
## [10] 1.6356275
## [11] 1.6185897
## [12] 1.5538462
## [13] 1.5538462
## [14] 1.5174279
## [15] 1.5159475
## [16] 1.5106838
## [17] 1.4734748
## [18] 1.4698545
## [19] 1.4454383
## [20] 1.4311741
## [21] 1.4243590
## [22] 1.4064987
## [23] 1.3984615
## [24] 1.3710407
## [25] 1.3710407
## [26] 1.3596154
## [27] 1.2948718
## [28] 1.2583965

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## [29] 1.2301282
## [30] 1.1869658
## [31] 1.1744186
## [32] 1.1561355
## [33] 1.0956607
## [34] 1.0790598
## [35] 1.0594406
## [36] 1.0152972
## [37] 0.9711538
## [38] 0.9189413
##      lhs                rhs          support  confidence lift
## [1] {type=fish}          => {tail=TRUE} 0.1287129 1.0000000 1.3466667
## [2] {type=bird}           => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [3] {feathers=TRUE}       => {tail=TRUE} 0.1980198 1.0000000 1.3466667
## [4] {fins=TRUE}           => {tail=TRUE} 0.1584158 0.9411765 1.2674510
## [5] {catsize=TRUE}        => {tail=TRUE} 0.3762376 0.8636364 1.1630303
## [6] {eggs=FALSE}           => {tail=TRUE} 0.3564356 0.8571429 1.1542857
## [7] {milk=TRUE}            => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [8] {type=mammal}         => {tail=TRUE} 0.3465347 0.8536585 1.1495935
## [9] {legs=FALSE}          => {tail=TRUE} 0.1782178 0.7826087 1.0539130
## [10] {hair=TRUE}           => {tail=TRUE} 0.3267327 0.7674419 1.0334884
## [11] {aquatic=FALSE}       => {tail=TRUE} 0.4851485 0.7538462 1.0151795
## [12] {airborne=TRUE}       => {tail=TRUE} 0.1782178 0.7500000 1.0100000
## [13] {predator=TRUE}        => {tail=TRUE} 0.4158416 0.7500000 1.0100000
## [14] {domestic=FALSE}      => {tail=TRUE} 0.6435644 0.7386364 0.9946970
## [15] {predator=FALSE}      => {tail=TRUE} 0.3267327 0.7333333 0.9875556
## [16] {hair=FALSE}           => {tail=TRUE} 0.4158416 0.7241379 0.9751724
## [17] {feathers=FALSE}      => {tail=TRUE} 0.5445545 0.6790123 0.9144033
## [18] {eggs=TRUE}            => {tail=TRUE} 0.3861386 0.6610169 0.8901695
## [19] {catsize=FALSE}       => {tail=TRUE} 0.3663366 0.6491228 0.8741520
## [20] {toothed=FALSE}       => {tail=TRUE} 0.2277228 0.5750000 0.7743333
##      lhs                rhs          support  confidence
## [1] {eggs=TRUE,aquatic=FALSE} => {tail=FALSE} 0.1089109 0.3793103
## [2] {milk=FALSE,aquatic=FALSE}  => {tail=FALSE} 0.1089109 0.3666667
## [3] {aquatic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.473475
## [2] 1.424359
## [3] 1.371041
##      lhs                rhs          support  confidence
## [1] {predator=TRUE,fins=FALSE} => {tail=FALSE} 0.1287129 0.3023256
## [2] {predator=TRUE,legs=TRUE}  => {tail=FALSE} 0.1089109 0.2820513
##      lift
## [1] 1.174419
## [2] 1.095661
##      lhs                rhs          support  confidence
## [1] {domestic=FALSE,catsize=FALSE} => {tail=FALSE} 0.1782178 0.3600000
## [2] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
## [3] {fins=FALSE,domestic=FALSE}    => {tail=FALSE} 0.2178218 0.3055556
## [4] {legs=TRUE,domestic=FALSE}      => {tail=FALSE} 0.1782178 0.2727273
##      lift
## [1] 1.398462
## [2] 1.258397
## [3] 1.186966

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## [4] 1.059441
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
##      lift
## [1] 1.371041
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,feathers=FALSE} => {tail=FALSE} 0.1584158 0.4210526
## [2] {hair=FALSE,fins=FALSE}      => {tail=FALSE} 0.1584158 0.3720930
## [3] {hair=FALSE,airborne=FALSE} => {tail=FALSE} 0.1386139 0.3500000
## [4] {hair=FALSE,legs=TRUE}       => {tail=FALSE} 0.1188119 0.3333333
##      lift
## [1] 1.635628
## [2] 1.445438
## [3] 1.359615
## [4] 1.294872
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}      => {tail=FALSE} 0.1980198 0.5128205
## [3] {feathers=FALSE,milk=FALSE}     => {tail=FALSE} 0.1980198 0.5000000
## [4] {feathers=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1980198 0.4651163
## [5] {hair=FALSE,feathers=FALSE}      => {tail=FALSE} 0.1584158 0.4210526
## [6] {feathers=FALSE,fins=FALSE}      => {tail=FALSE} 0.2475248 0.3906250
## [7] {feathers=FALSE,legs=TRUE}       => {tail=FALSE} 0.2079208 0.3620690
## [8] {feathers=FALSE,predator=FALSE} => {tail=FALSE} 0.1188119 0.3529412
## [9] {feathers=FALSE,domestic=FALSE} => {tail=FALSE} 0.2277228 0.3239437
##      lift
## [1] 3.301923
## [2] 1.992110
## [3] 1.942308
## [4] 1.806798
## [5] 1.635628
## [6] 1.517428
## [7] 1.406499
## [8] 1.371041
## [9] 1.258397
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,eggs=TRUE} => {tail=FALSE} 0.1980198 0.5128205
## [2] {eggs=TRUE,fins=FALSE}          => {tail=FALSE} 0.1980198 0.4347826
## [3] {eggs=TRUE,legs=TRUE}           => {tail=FALSE} 0.1584158 0.4000000
## [4] {eggs=TRUE,aquatic=FALSE}       => {tail=FALSE} 0.1089109 0.3793103
## [5] {eggs=TRUE,airborne=FALSE}      => {tail=FALSE} 0.1386139 0.3783784
##      lift
## [1] 1.992110
## [2] 1.688963
## [3] 1.553846
## [4] 1.473475
## [5] 1.469854
##      lhs                                rhs            support  confidence
## [1] {feathers=FALSE,catsize=FALSE} => {tail=FALSE} 0.1980198 0.4651163
## [2] {fins=FALSE,catsize=FALSE}       => {tail=FALSE} 0.1980198 0.4166667
## [3] {legs=TRUE,catsize=FALSE}        => {tail=FALSE} 0.1584158 0.3902439
## [4] {airborne=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1386139 0.3888889
## [5] {domestic=FALSE,catsize=FALSE}  => {tail=FALSE} 0.1782178 0.3600000
## [6] {aquatic=FALSE,catsize=FALSE}    => {tail=FALSE} 0.1188119 0.3529412

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## lift
## [1] 1.806798
## [2] 1.618590
## [3] 1.515947
## [4] 1.510684
## [5] 1.398462
## [6] 1.371041
## lhs rhs support confidence
## [1] {feathers=FALSE,toothed=FALSE} => {tail=FALSE} 0.1683168 0.8500000
## [2] {airborne=FALSE,toothed=FALSE} => {tail=FALSE} 0.1089109 0.6111111
## lift
## [1] 3.301923
## [2] 2.373932
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=fish} => {breathes=FALSE} 0.1287129
## [2] {eggs=TRUE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [3] {milk=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [4] {hair=FALSE,fins=TRUE} => {breathes=FALSE} 0.1287129
## [5] {aquatic=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [6] {milk=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [7] {eggs=TRUE,legs=FALSE} => {breathes=FALSE} 0.1485149
## [8] {legs=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [9] {hair=FALSE,legs=FALSE} => {breathes=FALSE} 0.1584158
## [10] {predator=TRUE,legs=FALSE} => {breathes=FALSE} 0.1188119
## [11] {milk=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [12] {feathers=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [13] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [14] {aquatic=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [15] {eggs=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1287129
## [16] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [17] {eggs=TRUE,aquatic=TRUE} => {breathes=FALSE} 0.1881188
## [18] {hair=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [19] {aquatic=TRUE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [20] {hair=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139
## [21] {hair=FALSE,feathers=FALSE} => {breathes=FALSE} 0.2079208
## [22] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [23] {eggs=TRUE,airborne=FALSE} => {breathes=FALSE} 0.1980198
## [24] {hair=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [25] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [26] {feathers=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [27] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [28] {eggs=TRUE,predator=TRUE} => {breathes=FALSE} 0.1584158
## [29] {hair=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [30] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [31] {predator=TRUE,catsize=FALSE} => {breathes=FALSE} 0.1188119
## [32] {hair=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208
## [33] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [34] {hair=FALSE,eggs=TRUE} => {breathes=FALSE} 0.1980198
## [35] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [36] {hair=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [37] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [38] {feathers=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
## [39] {eggs=TRUE,domestic=FALSE} => {breathes=FALSE} 0.1881188

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## [40] {airborne=FALSE,predator=TRUE}  => {breathes=FALSE} 0.1683168
## [41] {domestic=FALSE,catsize=FALSE}  => {breathes=FALSE} 0.1485149
## [42] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [43] {feathers=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208
## [44] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [45] {toothed=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1287129
## [46] {tail=TRUE}                     => {breathes=FALSE} 0.1386139
##      confidence lift
## [1] 1.0000000 4.8095238
## [2] 1.0000000 4.8095238
## [3] 1.0000000 4.8095238
## [4] 0.8666667 4.1682540
## [5] 0.8333333 4.0079365
## [6] 0.8000000 3.8476190
## [7] 0.7894737 3.7969925
## [8] 0.7500000 3.6071429
## [9] 0.7272727 3.4978355
## [10] 0.7058824 3.3949580
## [11] 0.6666667 3.2063492
## [12] 0.6666667 3.2063492
## [13] 0.6666667 3.2063492
## [14] 0.6521739 3.1366460
## [15] 0.6500000 3.1261905
## [16] 0.6451613 3.1029186
## [17] 0.6333333 3.0460317
## [18] 0.6250000 3.0059524
## [19] 0.6086957 2.9275362
## [20] 0.6086957 2.9275362
## [21] 0.5526316 2.6578947
## [22] 0.5526316 2.6578947
## [23] 0.5405405 2.5997426
## [24] 0.5250000 2.5250000
## [25] 0.5250000 2.5250000
## [26] 0.5128205 2.4664225
## [27] 0.5000000 2.4047619
## [28] 0.4848485 2.3318903
## [29] 0.4722222 2.2711640
## [30] 0.4444444 2.1375661
## [31] 0.4285714 2.0612245
## [32] 0.3750000 1.8035714
## [33] 0.3720930 1.7895903
## [34] 0.3703704 1.7813051
## [35] 0.3703704 1.7813051
## [36] 0.3636364 1.7489177
## [37] 0.3636364 1.7489177
## [38] 0.3617021 1.7396150
## [39] 0.3518519 1.6922399
## [40] 0.3469388 1.6686103
## [41] 0.3000000 1.4428571
## [42] 0.2941176 1.4145658
## [43] 0.2876712 1.3835616
## [44] 0.2816901 1.3547954
## [45] 0.2500000 1.2023810
## [46] 0.1866667 0.8977778

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##      lhs                      rhs          support  confidence lift
## [1] {type=bird}              => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [2] {feathers=TRUE}          => {breathes=TRUE} 0.1980198 1.0000000 1.2625000
## [3] {airborne=TRUE}          => {breathes=TRUE} 0.2376238 1.0000000 1.2625000
## [4] {milk=TRUE}               => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [5] {type=mammal}            => {breathes=TRUE} 0.4059406 1.0000000 1.2625000
## [6] {hair=TRUE}               => {breathes=TRUE} 0.4257426 1.0000000 1.2625000
## [7] {aquatic=FALSE}          => {breathes=TRUE} 0.6336634 0.9846154 1.2430769
## [8] {eggs=FALSE}              => {breathes=TRUE} 0.4059406 0.9761905 1.2324405
## [9] {legs=TRUE}               => {breathes=TRUE} 0.7227723 0.9358974 1.1815705
## [10] {domestic=TRUE}          => {breathes=TRUE} 0.1188119 0.9230769 1.1653846
## [11] {predator=FALSE}         => {breathes=TRUE} 0.4059406 0.9111111 1.1502778
## [12] {catsize=TRUE}           => {breathes=TRUE} 0.3861386 0.8863636 1.1190341
## [13] {toothed=FALSE}          => {breathes=TRUE} 0.3267327 0.8250000 1.0415625
## [14] {tail=TRUE}               => {breathes=TRUE} 0.6039604 0.8133333 1.0268333
## [15] {domestic=FALSE}          => {breathes=TRUE} 0.6732673 0.7727273 0.9755682
## [16] {tail=FALSE}              => {breathes=TRUE} 0.1881188 0.7307692 0.9225962
## [17] {airborne=FALSE}          => {breathes=TRUE} 0.5544554 0.7272727 0.9181818
## [18] {catsize=FALSE}            => {breathes=TRUE} 0.4059406 0.7192982 0.9081140
## [19] {predator=TRUE}           => {breathes=TRUE} 0.3861386 0.6964286 0.8792411
## [20] {eggs=TRUE}               => {breathes=TRUE} 0.3861386 0.6610169 0.8345339
## [21] {milk=FALSE}              => {breathes=TRUE} 0.3861386 0.6500000 0.8206250
## [22] {backbone=FALSE}          => {breathes=TRUE} 0.1089109 0.6111111 0.7715278
##      lhs                      rhs          support
## [1] {hair=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [3] {eggs=TRUE,domestic=FALSE}   => {breathes=FALSE} 0.1881188
## [4] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
## [5] {airborne=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [6] {feathers=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198
## [7] {toothed=TRUE,domestic=FALSE}  => {breathes=FALSE} 0.1287129
##      confidence lift
## [1] 0.3703704 1.781305
## [2] 0.3636364 1.748918
## [3] 0.3518519 1.692240
## [4] 0.3000000 1.442857
## [5] 0.2941176 1.414566
## [6] 0.2816901 1.354795
## [7] 0.2500000 1.202381
##      lhs                      rhs          support
## [1] {airborne=FALSE,aquatic=TRUE} => {breathes=FALSE} 0.1980198
## [2] {milk=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
## [3] {eggs=TRUE,airborne=FALSE}      => {breathes=FALSE} 0.1980198
## [4] {hair=FALSE,airborne=FALSE}     => {breathes=FALSE} 0.2079208
## [5] {airborne=FALSE,catsize=FALSE}   => {breathes=FALSE} 0.1584158
## [6] {airborne=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,domestic=FALSE}  => {breathes=FALSE} 0.1980198
## [8] {feathers=FALSE,airborne=FALSE}  => {breathes=FALSE} 0.2079208
##      confidence lift
## [1] 0.6451613 3.102919
## [2] 0.5526316 2.657895
## [3] 0.5405405 2.599743
## [4] 0.5250000 2.525000
## [5] 0.4444444 2.137566

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## [6] 0.3469388 1.668610
## [7] 0.2941176 1.414566
## [8] 0.2876712 1.383562
##      lhs                                rhs                                support
## [1] {legs=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {aquatic=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1485149
## [3] {airborne=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [4] {predator=TRUE,catsize=FALSE}   => {breathes=FALSE} 0.1188119
## [5] {feathers=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1584158
## [6] {hair=FALSE,catsize=FALSE}      => {breathes=FALSE} 0.1584158
## [7] {domestic=FALSE,catsize=FALSE} => {breathes=FALSE} 0.1485149
##      confidence lift
## [1] 0.7500000 3.607143
## [2] 0.6521739 3.136646
## [3] 0.4444444 2.137566
## [4] 0.4285714 2.061224
## [5] 0.3720930 1.789590
## [6] 0.3636364 1.748918
## [7] 0.3000000 1.442857
##      lhs                                rhs                                support
## [1] {predator=TRUE,legs=FALSE}      => {breathes=FALSE} 0.1188119
## [2] {milk=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [3] {eggs=TRUE,predator=TRUE}        => {breathes=FALSE} 0.1584158
## [4] {hair=FALSE,predator=TRUE}       => {breathes=FALSE} 0.1683168
## [5] {predator=TRUE,catsize=FALSE}    => {breathes=FALSE} 0.1188119
## [6] {feathers=FALSE,predator=TRUE}   => {breathes=FALSE} 0.1683168
## [7] {airborne=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168
##      confidence lift
## [1] 0.7058824 3.394958
## [2] 0.5000000 2.404762
## [3] 0.4848485 2.331890
## [4] 0.4722222 2.271164
## [5] 0.4285714 2.061224
## [6] 0.3617021 1.739615
## [7] 0.3469388 1.668610
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,fins=TRUE}          => {breathes=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,legs=FALSE}          => {breathes=FALSE} 0.1485149 0.7894737
## [3] {eggs=TRUE,toothed=TRUE}        => {breathes=FALSE} 0.1287129 0.6500000
## [4] {eggs=TRUE,aquatic=TRUE}        => {breathes=FALSE} 0.1881188 0.6333333
## [5] {eggs=TRUE,airborne=FALSE}      => {breathes=FALSE} 0.1980198 0.5405405
## [6] {feathers=FALSE,eggs=TRUE}      => {breathes=FALSE} 0.1980198 0.5128205
## [7] {eggs=TRUE,predator=TRUE}      => {breathes=FALSE} 0.1584158 0.4848485
## [8] {hair=FALSE,eggs=TRUE}         => {breathes=FALSE} 0.1980198 0.3703704
## [9] {eggs=TRUE,domestic=FALSE}    => {breathes=FALSE} 0.1881188 0.3518519
##      lift
## [1] 4.809524
## [2] 3.796992
## [3] 3.126190
## [4] 3.046032
## [5] 2.599743
## [6] 2.466422
## [7] 2.331890
## [8] 1.781305

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## [9] 1.692240
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,fins=TRUE}      => {breathes=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,legs=FALSE}    => {breathes=FALSE} 0.1584158 0.8000000
## [3] {milk=FALSE,aquatic=TRUE}  => {breathes=FALSE} 0.1980198 0.6666667
## [4] {milk=FALSE,toothed=TRUE} => {breathes=FALSE} 0.1386139 0.6666667
## [5] {milk=FALSE,airborne=FALSE} => {breathes=FALSE} 0.2079208 0.5526316
## [6] {feathers=FALSE,milk=FALSE} => {breathes=FALSE} 0.2079208 0.5250000
## [7] {milk=FALSE,predator=TRUE} => {breathes=FALSE} 0.1683168 0.5000000
## [8] {hair=FALSE,milk=FALSE}    => {breathes=FALSE} 0.2079208 0.3750000
## [9] {milk=FALSE,domestic=FALSE} => {breathes=FALSE} 0.1980198 0.3636364
##      lift
## [1] 4.809524
## [2] 3.847619
## [3] 3.206349
## [4] 3.206349
## [5] 2.657895
## [6] 2.525000
## [7] 2.404762
## [8] 1.803571
## [9] 1.748918
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=fish}                      => {aquatic=TRUE} 0.1287129
## [2] {fins=TRUE}                      => {aquatic=TRUE} 0.1683168
## [3] {breathes=FALSE,tail=TRUE}        => {aquatic=TRUE} 0.1386139
## [4] {backbone=TRUE,breathes=FALSE}    => {aquatic=TRUE} 0.1386139
## [5] {breathes=FALSE}                  => {aquatic=TRUE} 0.1980198
## [6] {backbone=TRUE,legs=FALSE}        => {aquatic=TRUE} 0.1683168
## [7] {hair=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1980198
## [8] {milk=FALSE,toothed=TRUE}          => {aquatic=TRUE} 0.1782178
## [9] {eggs=TRUE,toothed=TRUE}           => {aquatic=TRUE} 0.1683168
## [10] {predator=TRUE,legs=FALSE}         => {aquatic=TRUE} 0.1386139
## [11] {venomous=FALSE,legs=FALSE}        => {aquatic=TRUE} 0.1485149
## [12] {legs=FALSE}                     => {aquatic=TRUE} 0.1782178
## [13] {eggs=TRUE,predator=TRUE}          => {aquatic=TRUE} 0.2277228
## [14] {hair=FALSE,predator=TRUE}         => {aquatic=TRUE} 0.2475248
## [15] {hair=FALSE,feathers=FALSE}        => {aquatic=TRUE} 0.2574257
## [16] {milk=FALSE,predator=TRUE}         => {aquatic=TRUE} 0.2277228
## [17] {eggs=TRUE,airborne=FALSE}         => {aquatic=TRUE} 0.2475248
## [18] {hair=FALSE,airborne=FALSE}        => {aquatic=TRUE} 0.2673267
## [19] {milk=FALSE,airborne=FALSE}        => {aquatic=TRUE} 0.2475248
## [20] {feathers=FALSE,eggs=TRUE}         => {aquatic=TRUE} 0.2376238
## [21] {predator=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1683168
## [22] {feathers=FALSE,milk=FALSE}        => {aquatic=TRUE} 0.2376238
## [23] {hair=FALSE,backbone=TRUE}         => {aquatic=TRUE} 0.2574257
## [24] {predator=TRUE,toothed=FALSE}      => {aquatic=TRUE} 0.1089109
## [25] {hair=FALSE,domestic=FALSE}        => {aquatic=TRUE} 0.3069307
## [26] {eggs=TRUE,backbone=TRUE}          => {aquatic=TRUE} 0.2376238
## [27] {milk=FALSE,backbone=TRUE}         => {aquatic=TRUE} 0.2376238
## [28] {toothed=TRUE,catsize=FALSE}       => {aquatic=TRUE} 0.1386139
## [29] {eggs=TRUE,tail=TRUE}              => {aquatic=TRUE} 0.2079208
## [30] {predator=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287
## [31] {eggs=TRUE,domestic=FALSE}        => {aquatic=TRUE} 0.2871287

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## [32] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [33] {milk=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.2871287
## [34] {milk=FALSE,tail=TRUE}         => {aquatic=TRUE} 0.2079208
## [35] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178
## [36] {feathers=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188
## [37] {airborne=FALSE,domestic=FALSE}=> {aquatic=TRUE} 0.2970297
## [38] {domestic=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.2178218
## [39] {toothed=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2178218
## [40] {feathers=FALSE,domestic=FALSE}=> {aquatic=TRUE} 0.2871287
## [41] {backbone=TRUE,domestic=FALSE} => {aquatic=TRUE} 0.2871287
## [42] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149
## [43] {feathers=FALSE,backbone=TRUE} => {aquatic=TRUE} 0.2376238
## [44] {backbone=TRUE}               => {aquatic=TRUE} 0.2970297
## [45] {tail=TRUE}                   => {aquatic=TRUE} 0.2574257
## [46] {venomous=FALSE}              => {aquatic=TRUE} 0.3168317
## [47] {toothed=FALSE}               => {aquatic=TRUE} 0.1287129
## [48] {breathes=TRUE}               => {aquatic=TRUE} 0.1584158
##      confidence lift
## [1] 1.0000000 2.8055556
## [2] 1.0000000 2.8055556
## [3] 1.0000000 2.8055556
## [4] 1.0000000 2.8055556
## [5] 0.9523810 2.6719577
## [6] 0.8947368 2.5102339
## [7] 0.8695652 2.4396135
## [8] 0.8571429 2.4047619
## [9] 0.8500000 2.3847222
## [10] 0.8235294 2.3104575
## [11] 0.7894737 2.2149123
## [12] 0.7826087 2.1956522
## [13] 0.6969697 1.9553872
## [14] 0.6944444 1.9483025
## [15] 0.6842105 1.9195906
## [16] 0.6764706 1.8978758
## [17] 0.6756757 1.8956456
## [18] 0.6750000 1.8937500
## [19] 0.6578947 1.8457602
## [20] 0.6153846 1.7264957
## [21] 0.6071429 1.7033730
## [22] 0.6000000 1.6833333
## [23] 0.5909091 1.6578283
## [24] 0.5789474 1.6242690
## [25] 0.5740741 1.6105967
## [26] 0.5714286 1.6031746
## [27] 0.5714286 1.6031746
## [28] 0.5384615 1.5106838
## [29] 0.5384615 1.5106838
## [30] 0.5370370 1.5066872
## [31] 0.5370370 1.5066872
## [32] 0.5277778 1.4807099
## [33] 0.5272727 1.4792929
## [34] 0.5250000 1.4729167
## [35] 0.4500000 1.2625000
## [36] 0.4418605 1.2396641

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## [37] 0.4411765 1.2377451
## [38] 0.4400000 1.2344444
## [39] 0.4230769 1.1869658
## [40] 0.4084507 1.1459311
## [41] 0.4084507 1.1459311
## [42] 0.4054054 1.1373874
## [43] 0.3809524 1.0687831
## [44] 0.3614458 1.0140562
## [45] 0.3466667 0.9725926
## [46] 0.3440860 0.9653524
## [47] 0.3250000 0.9118056
## [48] 0.2000000 0.5611111

##      lhs      rhs      support  confidence lift
## [1] {domestic=TRUE} => {aquatic=FALSE} 0.1188119 0.9230769 1.4343195
## [2] {hair=TRUE}      => {aquatic=FALSE} 0.3861386 0.9069767 1.4093023
## [3] {eggs=FALSE}     => {aquatic=FALSE} 0.3564356 0.8571429 1.3318681
## [4] {milk=TRUE}      => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [5] {type=mammal}    => {aquatic=FALSE} 0.3465347 0.8536585 1.3264540
## [6] {predator=FALSE} => {aquatic=FALSE} 0.3762376 0.8444444 1.3121368
## [7] {fins=FALSE}     => {aquatic=FALSE} 0.6435644 0.7738095 1.2023810
## [8] {toothed=FALSE}  => {aquatic=FALSE} 0.2673267 0.6750000 1.0488462
## [9] {toothed=TRUE}   => {aquatic=FALSE} 0.3762376 0.6229508 0.9679697
## [10] {tail=FALSE}     => {aquatic=FALSE} 0.1584158 0.6153846 0.9562130
## [11] {domestic=FALSE} => {aquatic=FALSE} 0.5247525 0.6022727 0.9358392
## [12] {catsize=FALSE} => {aquatic=FALSE} 0.3366337 0.5964912 0.9268556
## [13] {eggs=TRUE}      => {aquatic=FALSE} 0.2871287 0.4915254 0.7637549

##      lhs      rhs      support  confidence
## [1] {predator=TRUE,toothed=FALSE} => {aquatic=TRUE} 0.1089109 0.5789474
## lift
## [1] 1.624269

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE}      => {aquatic=TRUE} 0.1980198 0.8695652
## [2] {milk=FALSE,toothed=TRUE}       => {aquatic=TRUE} 0.1782178 0.8571429
## [3] {eggs=TRUE,toothed=TRUE}        => {aquatic=TRUE} 0.1683168 0.8500000
## [4] {toothed=TRUE,catsize=FALSE}    => {aquatic=TRUE} 0.1386139 0.5384615
## [5] {toothed=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2178218 0.4230769
## lift
## [1] 2.439614
## [2] 2.404762
## [3] 2.384722
## [4] 1.510684
## [5] 1.186966

##      lhs      rhs      support  confidence
## [1] {hair=FALSE,domestic=FALSE}    => {aquatic=TRUE} 0.3069307 0.5740741
## [2] {predator=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.5370370
## [3] {eggs=TRUE,domestic=FALSE}      => {aquatic=TRUE} 0.2871287 0.5370370
## [4] {milk=FALSE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5272727
## [5] {airborne=FALSE,domestic=FALSE} => {aquatic=TRUE} 0.2970297 0.4411765
## [6] {domestic=FALSE,catsize=FALSE}    => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {toothed=TRUE,domestic=FALSE}    => {aquatic=TRUE} 0.2178218 0.4230769
## [8] {feathers=FALSE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
## [9] {backbone=TRUE,domestic=FALSE}  => {aquatic=TRUE} 0.2871287 0.4084507
## lift
## [1] 1.610597

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## [2] 1.506687
## [3] 1.506687
## [4] 1.479293
## [5] 1.237745
## [6] 1.234444
## [7] 1.186966
## [8] 1.145931
## [9] 1.145931
##      lhs                                rhs          support  confidence
## [1] {predator=TRUE,catsize=FALSE} => {aquatic=TRUE} 0.1683168 0.6071429
## [2] {toothed=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1386139 0.5384615
## [3] {airborne=FALSE,catsize=FALSE} => {aquatic=TRUE} 0.1881188 0.5277778
## [4] {backbone=TRUE,catsize=FALSE}  => {aquatic=TRUE} 0.1782178 0.4500000
## [5] {feathers=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.1881188 0.4418605
## [6] {domestic=FALSE,catsize=FALSE}  => {aquatic=TRUE} 0.2178218 0.4400000
## [7] {tail=TRUE,catsize=FALSE}      => {aquatic=TRUE} 0.1485149 0.4054054
##      lift
## [1] 1.703373
## [2] 1.510684
## [3] 1.480710
## [4] 1.262500
## [5] 1.239664
## [6] 1.234444
## [7] 1.137387
##      lhs                                rhs          support  confidence
## [1] {eggs=TRUE,toothed=TRUE}      => {aquatic=TRUE} 0.1683168 0.8500000
## [2] {eggs=TRUE,predator=TRUE}      => {aquatic=TRUE} 0.2277228 0.6969697
## [3] {eggs=TRUE,airborne=FALSE}     => {aquatic=TRUE} 0.2475248 0.6756757
## [4] {feathers=FALSE,eggs=TRUE}     => {aquatic=TRUE} 0.2376238 0.6153846
## [5] {eggs=TRUE,backbone=TRUE}       => {aquatic=TRUE} 0.2376238 0.5714286
## [6] {eggs=TRUE,tail=TRUE}           => {aquatic=TRUE} 0.2079208 0.5384615
## [7] {eggs=TRUE,domestic=FALSE}     => {aquatic=TRUE} 0.2871287 0.5370370
##      lift
## [1] 2.384722
## [2] 1.955387
## [3] 1.895646
## [4] 1.726496
## [5] 1.603175
## [6] 1.510684
## [7] 1.506687
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs          support
## [1] {type=bird}                        => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE}                    => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}         => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE}          => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE}         => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE}        => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE}         => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}        => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}              => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}             => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}             => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}            => {toothed=FALSE} 0.1683168

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## [13] {milk=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}    => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}  => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}  => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}   => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}    => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}   => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}     => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                 => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}  => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}              => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}  => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}   => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}              => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949

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## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}     => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}    => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}    => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}   => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE} => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}     => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE} => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}  => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}   => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE} => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}  => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE} => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE} => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}    => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}     => {toothed=TRUE} 0.1980198 0.3389831 0.5612670

##      lhs      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift

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## [1] 1.727632
## [2] 1.683333
##      lhs                                rhs                                support
## [1] {tail=FALSE,domestic=FALSE}      => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}      => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}       => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE}    => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                                rhs                                support  confidence
## [1] {eggs=TRUE,breathes=TRUE}        => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}        => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}        => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                                rhs                                support
## [1] {eggs=TRUE,predator=FALSE}        => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}        => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}        => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}         => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}         => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                rhs                                support  confidence
## [1] {tail=FALSE,catsize=FALSE}        => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}          => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}         => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}          => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}       => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000

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## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                rhs            support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}      => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE}     => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE}  => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
##      lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
##      lhs                                rhs            support  confidence
## [1] {eggs=TRUE,airborne=TRUE}  => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE}   => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE}       => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE}      => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE}       => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE}  => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE}  => {toothed=FALSE} 0.3564356 0.6792453
##      lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs            support
## [1] {domestic=TRUE}                => {predator=FALSE} 0.1089109
## [2] {hair=TRUE,catsize=FALSE}        => {predator=FALSE} 0.1089109
## [3] {airborne=TRUE,aquatic=FALSE}    => {predator=FALSE} 0.1485149
## [4] {airborne=TRUE}                  => {predator=FALSE} 0.1683168
## [5] {aquatic=FALSE,toothed=FALSE}    => {predator=FALSE} 0.1881188
## [6] {aquatic=FALSE,tail=FALSE}       => {predator=FALSE} 0.1089109
## [7] {aquatic=FALSE,catsize=FALSE}    => {predator=FALSE} 0.2277228
## [8] {eggs=TRUE,aquatic=FALSE}        => {predator=FALSE} 0.1881188

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## [9] {toothed=FALSE,breathes=TRUE} => {predator=FALSE} 0.2079208
## [10] {milk=FALSE,aquatic=FALSE} => {predator=FALSE} 0.1881188
## [11] {breathes=TRUE,tail=FALSE} => {predator=FALSE} 0.1188119
## [12] {breathes=TRUE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [13] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
## [14] {eggs=TRUE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [15] {milk=FALSE,breathes=TRUE} => {predator=FALSE} 0.2178218
## [16] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [17] {type=bird} => {predator=FALSE} 0.1089109
## [18] {feathers=TRUE} => {predator=FALSE} 0.1089109
## [19] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119
## [20] {venomous=FALSE,catsize=FALSE} => {predator=FALSE} 0.2673267
## [21] {toothed=FALSE,venomous=FALSE} => {predator=FALSE} 0.1881188
## [22] {toothed=FALSE} => {predator=FALSE} 0.2079208
## [23] {fins=FALSE,catsize=FALSE} => {predator=FALSE} 0.2475248
## [24] {breathes=TRUE,venomous=FALSE} => {predator=FALSE} 0.3861386
## [25] {catsize=FALSE} => {predator=FALSE} 0.2871287
## [26] {legs=TRUE,tail=TRUE} => {predator=FALSE} 0.2871287
## [27] {venomous=FALSE,fins=FALSE} => {predator=FALSE} 0.3861386
## [28] {fins=FALSE,tail=TRUE} => {predator=FALSE} 0.2871287
## [29] {milk=TRUE} => {predator=FALSE} 0.1881188
## [30] {type=mammal} => {predator=FALSE} 0.1881188
## [31] {tail=FALSE} => {predator=FALSE} 0.1188119
## [32] {eggs=FALSE} => {predator=FALSE} 0.1881188
## [33] {eggs=TRUE} => {predator=FALSE} 0.2574257
## [34] {milk=FALSE} => {predator=FALSE} 0.2574257
## [35] {domestic=FALSE} => {predator=FALSE} 0.3366337
## [36] {hair=FALSE} => {predator=FALSE} 0.2178218
## [37] {catsize=TRUE} => {predator=FALSE} 0.1584158
## confidence lift
## [1] 0.8461538 1.8991453
## [2] 0.8461538 1.8991453
## [3] 0.7894737 1.7719298
## [4] 0.7083333 1.5898148
## [5] 0.7037037 1.5794239
## [6] 0.6875000 1.5430556
## [7] 0.6764706 1.5183007
## [8] 0.6551724 1.4704981
## [9] 0.6363636 1.4282828
## [10] 0.6333333 1.4214815
## [11] 0.6315789 1.4175439
## [12] 0.6097561 1.3685637
## [13] 0.5901639 1.3245902
## [14] 0.5641026 1.2660969
## [15] 0.5641026 1.2660969
## [16] 0.5609756 1.2590786
## [17] 0.5500000 1.2344444
## [18] 0.5500000 1.2344444
## [19] 0.5454545 1.2242424
## [20] 0.5400000 1.2120000
## [21] 0.5277778 1.1845679
## [22] 0.5250000 1.1783333
## [23] 0.5208333 1.1689815
## [24] 0.5200000 1.1671111

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## [25] 0.5087719 1.1419103
## [26] 0.5087719 1.1419103
## [27] 0.5064935 1.1367965
## [28] 0.4915254 1.1032015
## [29] 0.4634146 1.0401084
## [30] 0.4634146 1.0401084
## [31] 0.4615385 1.0358974
## [32] 0.4523810 1.0153439
## [33] 0.4406780 0.9890772
## [34] 0.4333333 0.9725926
## [35] 0.3863636 0.8671717
## [36] 0.3793103 0.8513410
## [37] 0.3636364 0.8161616
##      lhs                      rhs      support  confidence lift
## [1] {breathes=FALSE} => {predator=TRUE} 0.1683168 0.8095238 1.4600340
## [2] {aquatic=TRUE}   => {predator=TRUE} 0.2871287 0.8055556 1.4528770
## [3] {fins=TRUE}       => {predator=TRUE} 0.1287129 0.7647059 1.3792017
## [4] {catsize=TRUE}    => {predator=TRUE} 0.2772277 0.6363636 1.1477273
## [5] {backbone=TRUE}    => {predator=TRUE} 0.4653465 0.5662651 1.0212995
## [6] {eggs=FALSE}       => {predator=TRUE} 0.2277228 0.5476190 0.9876701
## [7] {legs=TRUE}        => {predator=TRUE} 0.3861386 0.5000000 0.9017857
## [8] {hair=TRUE}         => {predator=TRUE} 0.1980198 0.4651163 0.8388704
## [9] {aquatic=FALSE}    => {predator=TRUE} 0.2673267 0.4153846 0.7491758
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {predator=FALSE} 0.1188119 0.5454545
##      lift
## [1] 1.224242
##      lhs                      rhs      support  confidence
## [1] {legs=TRUE,catsize=FALSE} => {predator=FALSE} 0.2277228 0.5609756
## [2] {legs=TRUE,tail=TRUE}      => {predator=FALSE} 0.2871287 0.5087719
##      lift
## [1] 1.259079
## [2] 1.141910
##      lhs                      rhs      support  confidence
## [1] {hair=TRUE,catsize=FALSE} => {predator=FALSE} 0.1089109 0.8461538
##      lift
## [1] 1.899145
##      lhs                      rhs      support
## [1] {airborne=TRUE,aquatic=FALSE} => {predator=FALSE} 0.1485149
## [2] {aquatic=FALSE,toothed=FALSE} => {predator=FALSE} 0.1881188
## [3] {aquatic=FALSE,tail=FALSE}    => {predator=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {predator=FALSE} 0.2277228
## [5] {eggs=TRUE,aquatic=FALSE}       => {predator=FALSE} 0.1881188
## [6] {milk=FALSE,aquatic=FALSE}      => {predator=FALSE} 0.1881188
## [7] {aquatic=FALSE,venomous=FALSE} => {predator=FALSE} 0.3564356
##      confidence lift
## [1] 0.7894737 1.771930
## [2] 0.7037037 1.579424
## [3] 0.6875000 1.543056
## [4] 0.6764706 1.518301
## [5] 0.6551724 1.470498
## [6] 0.6333333 1.421481
## [7] 0.5901639 1.324590
## [1] "Número de reglas con consecuente negado"

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##	lhs	rhs	support	confidence
## [1]	{milk=TRUE,predator=FALSE}	=> {hair=TRUE}	0.1881188	1.0000000
## [2]	{milk=TRUE,aquatic=FALSE}	=> {hair=TRUE}	0.3465347	1.0000000
## [3]	{milk=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3762376	1.0000000
## [4]	{milk=TRUE,fins=FALSE}	=> {hair=TRUE}	0.3663366	1.0000000
## [5]	{predator=FALSE,type=mammal}	=> {hair=TRUE}	0.1881188	1.0000000
## [6]	{aquatic=FALSE,type=mammal}	=> {hair=TRUE}	0.3465347	1.0000000
## [7]	{legs=TRUE,type=mammal}	=> {hair=TRUE}	0.3762376	1.0000000
## [8]	{fins=FALSE,type=mammal}	=> {hair=TRUE}	0.3663366	1.0000000
## [9]	{eggs=FALSE,predator=FALSE}	=> {hair=TRUE}	0.1881188	1.0000000
## [10]	{eggs=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3663366	0.9736842
## [11]	{eggs=FALSE,aquatic=FALSE}	=> {hair=TRUE}	0.3465347	0.9722222
## [12]	{milk=TRUE}	=> {hair=TRUE}	0.3861386	0.9512195
## [13]	{type=mammal}	=> {hair=TRUE}	0.3861386	0.9512195
## [14]	{eggs=FALSE,venomous=FALSE}	=> {hair=TRUE}	0.3762376	0.9500000
## [15]	{eggs=FALSE,fins=FALSE}	=> {hair=TRUE}	0.3564356	0.9473684
## [16]	{eggs=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3762376	0.9268293
## [17]	{aquatic=FALSE,toothed=TRUE}	=> {hair=TRUE}	0.3465347	0.9210526
## [18]	{eggs=FALSE}	=> {hair=TRUE}	0.3762376	0.9047619
## [19]	{toothed=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3663366	0.8809524
## [20]	{aquatic=FALSE,catSize=TRUE}	=> {hair=TRUE}	0.2574257	0.8387097
## [21]	{toothed=TRUE,catSize=TRUE}	=> {hair=TRUE}	0.2871287	0.8285714
## [22]	{toothed=TRUE,fins=FALSE}	=> {hair=TRUE}	0.3564356	0.8181818
## [23]	{toothed=TRUE,breathes=TRUE}	=> {hair=TRUE}	0.3762376	0.8085106
## [24]	{predator=FALSE,toothed=TRUE}	=> {hair=TRUE}	0.1881188	0.7916667
## [25]	{feathers=FALSE,catSize=TRUE}	=> {hair=TRUE}	0.2970297	0.7894737
## [26]	{legs=TRUE,catSize=TRUE}	=> {hair=TRUE}	0.2871287	0.7837838
## [27]	{fins=FALSE,catSize=TRUE}	=> {hair=TRUE}	0.2772277	0.7777778
## [28]	{breathes=TRUE,catSize=TRUE}	=> {hair=TRUE}	0.2970297	0.7692308
## [29]	{feathers=FALSE,aquatic=FALSE}	=> {hair=TRUE}	0.3861386	0.7647059
## [30]	{predator=FALSE,catSize=TRUE}	=> {hair=TRUE}	0.1188119	0.7500000
## [31]	{feathers=FALSE,legs=TRUE}	=> {hair=TRUE}	0.4158416	0.7241379
## [32]	{airborne=FALSE,aquatic=FALSE}	=> {hair=TRUE}	0.3267327	0.7173913
## [33]	{feathers=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.4257426	0.7166667
## [34]	{feathers=FALSE,predator=FALSE}	=> {hair=TRUE}	0.2277228	0.6764706
## [35]	{toothed=TRUE,venomous=FALSE}	=> {hair=TRUE}	0.3762376	0.6666667
## [36]	{airborne=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3564356	0.6666667
## [37]	{airborne=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3663366	0.6607143
## [38]	{aquatic=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3465347	0.6603774
## [39]	{aquatic=FALSE,legs=TRUE}	=> {hair=TRUE}	0.3861386	0.6500000
## [40]	{feathers=FALSE,fins=FALSE}	=> {hair=TRUE}	0.4059406	0.6406250
## [41]	{toothed=TRUE}	=> {hair=TRUE}	0.3762376	0.6229508
## [42]	{feathers=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3861386	0.6190476
## [43]	{aquatic=FALSE,tail=TRUE}	=> {hair=TRUE}	0.2970297	0.6122449
## [44]	{aquatic=FALSE,breathes=TRUE}	=> {hair=TRUE}	0.3861386	0.6093750
## [45]	{airborne=FALSE,predator=FALSE}	=> {hair=TRUE}	0.1683168	0.6071429
## [46]	{aquatic=FALSE,venomous=FALSE}	=> {hair=TRUE}	0.3663366	0.6065574
## [47]	{feathers=FALSE,tail=TRUE}	=> {hair=TRUE}	0.3267327	0.6000000
## [48]	{backbone=TRUE,legs=TRUE}	=> {hair=TRUE}	0.3762376	0.5937500
## [49]	{predator=FALSE,legs=TRUE}	=> {hair=TRUE}	0.2277228	0.5897436
## [50]	{airborne=FALSE,fins=FALSE}	=> {hair=TRUE}	0.3465347	0.5833333
## [51]	{legs=TRUE,tail=TRUE}	=> {hair=TRUE}	0.3267327	0.5789474
## [52]	{breathes=TRUE,legs=TRUE}	=> {hair=TRUE}	0.4158416	0.5753425
## [53]	{airborne=FALSE,backbone=TRUE}	=> {hair=TRUE}	0.3663366	0.5692308

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## [54] {backbone=TRUE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.5652174
## [55] {feathers=FALSE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5616438
## [56] {predator=FALSE,breathes=TRUE} => {hair=TRUE} 0.2277228 0.5609756
## [57] {predator=FALSE,fins=FALSE} => {hair=TRUE} 0.2277228 0.5609756
## [58] {backbone=TRUE,fins=FALSE} => {hair=TRUE} 0.3663366 0.5606061
## [59] {breathes=TRUE,venomous=FALSE} => {hair=TRUE} 0.4059406 0.5466667
## [60] {airborne=FALSE,tail=TRUE} => {hair=TRUE} 0.3069307 0.5438596
## [61] {fins=FALSE,tail=TRUE} => {hair=TRUE} 0.3168317 0.5423729
## [62] {breathes=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5409836
## [63] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## [64] {breathes=TRUE,fins=FALSE} => {hair=TRUE} 0.4059406 0.5394737
## [65] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [66] {airborne=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.5211268
## [67] {predator=FALSE,tail=TRUE} => {hair=TRUE} 0.1683168 0.5151515
## [68] {predator=FALSE} => {hair=TRUE} 0.2277228 0.5111111
## [69] {venomous=FALSE,fins=FALSE} => {hair=TRUE} 0.3861386 0.5064935
## [70] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
## [71] {backbone=TRUE} => {hair=TRUE} 0.3861386 0.4698795
## [72] {venomous=FALSE,tail=TRUE} => {hair=TRUE} 0.3267327 0.4647887
## [73] {domestic=FALSE} => {hair=TRUE} 0.3366337 0.3863636
## lift
## [1] 2.3488372
## [2] 2.3488372
## [3] 2.3488372
## [4] 2.3488372
## [5] 2.3488372
## [6] 2.3488372
## [7] 2.3488372
## [8] 2.3488372
## [9] 2.3488372
## [10] 2.2870257
## [11] 2.2835917
## [12] 2.2342598
## [13] 2.2342598
## [14] 2.2313953
## [15] 2.2252142
## [16] 2.1769711
## [17] 2.1634027
## [18] 2.1251384
## [19] 2.0692137
## [20] 1.9699925
## [21] 1.9461794
## [22] 1.9217759
## [23] 1.8990599
## [24] 1.8594961
## [25] 1.8543452
## [26] 1.8409805
## [27] 1.8268734
## [28] 1.8067979
## [29] 1.7961696
## [30] 1.7616279
## [31] 1.7008821
## [32] 1.6850354
## [33] 1.6833333

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## [34] 1.5889193
## [35] 1.5658915
## [36] 1.5658915
## [37] 1.5519103
## [38] 1.5511189
## [39] 1.5267442
## [40] 1.5047238
## [41] 1.4632101
## [42] 1.4540421
## [43] 1.4380636
## [44] 1.4313227
## [45] 1.4260797
## [46] 1.4247045
## [47] 1.4093023
## [48] 1.3946221
## [49] 1.3852117
## [50] 1.3701550
## [51] 1.3598531
## [52] 1.3513858
## [53] 1.3370304
## [54] 1.3276036
## [55] 1.3192099
## [56] 1.3176404
## [57] 1.3176404
## [58] 1.3167724
## [59] 1.2840310
## [60] 1.2774378
## [61] 1.2739456
## [62] 1.2706824
## [63] 1.2696417
## [64] 1.2671359
## [65] 1.2396641
## [66] 1.2240419
## [67] 1.2100070
## [68] 1.2005168
## [69] 1.1896708
## [70] 1.1595525
## [71] 1.1036705
## [72] 1.0917131
## [73] 0.9075053
##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {hair=FALSE} 0.1287129 1.0000000 1.7413793
## [2] {breathes=FALSE} => {hair=FALSE} 0.2079208 1.0000000 1.7413793
## [3] {legs=FALSE}    => {hair=FALSE} 0.2178218 0.9565217 1.6656672
## [4] {aquatic=TRUE}  => {hair=FALSE} 0.3168317 0.8888889 1.5478927
## [5] {toothed=FALSE} => {hair=FALSE} 0.3465347 0.8750000 1.5237069
## [6] {backbone=FALSE} => {hair=FALSE} 0.1386139 0.7777778 1.3544061
## [7] {catsize=FALSE} => {hair=FALSE} 0.4356436 0.7719298 1.3442226
## [8] {airborne=TRUE}  => {hair=FALSE} 0.1782178 0.7500000 1.3060345
## [9] {predator=TRUE}  => {hair=FALSE} 0.3564356 0.6428571 1.1194581
## [10] {tail=FALSE}    => {hair=FALSE} 0.1584158 0.6153846 1.0716180
## [11] {backbone=TRUE} => {hair=FALSE} 0.4356436 0.5301205 0.9231408
## [12] {breathes=TRUE} => {hair=FALSE} 0.3663366 0.4625000 0.8053879
## [13] {legs=TRUE}     => {hair=FALSE} 0.3564356 0.4615385 0.8037135

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## [14] {aquatic=FALSE} => {hair=FALSE} 0.2574257 0.4000000 0.6965517
##      lhs                                rhs      support  confidence
## [1] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [2] {feathers=FALSE,backbone=TRUE} => {hair=TRUE} 0.3861386 0.6190476
## [3] {backbone=TRUE,legs=TRUE}      => {hair=TRUE} 0.3762376 0.5937500
## [4] {airborne=FALSE,backbone=TRUE} => {hair=TRUE} 0.3663366 0.5692308
## [5] {backbone=TRUE,breathes=TRUE}  => {hair=TRUE} 0.3861386 0.5652174
## [6] {backbone=TRUE,fins=FALSE}     => {hair=TRUE} 0.3663366 0.5606061
## [7] {predator=FALSE,backbone=TRUE} => {hair=TRUE} 0.1881188 0.5277778
## [8] {backbone=TRUE,venomous=FALSE} => {hair=TRUE} 0.3861386 0.4936709
##      lift
## [1] 1.551119
## [2] 1.454042
## [3] 1.394622
## [4] 1.337030
## [5] 1.327604
## [6] 1.316772
## [7] 1.239664
## [8] 1.159553
##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,breathes=TRUE}      => {hair=TRUE} 0.3762376 0.9268293
## [2] {toothed=TRUE,breathes=TRUE}     => {hair=TRUE} 0.3762376 0.8085106
## [3] {breathes=TRUE,catSize=TRUE}     => {hair=TRUE} 0.2970297 0.7692308
## [4] {feathers=FALSE,breathes=TRUE}   => {hair=TRUE} 0.4257426 0.7166667
## [5] {airborne=FALSE,breathes=TRUE}   => {hair=TRUE} 0.3663366 0.6607143
## [6] {aquatic=FALSE,breathes=TRUE}     => {hair=TRUE} 0.3861386 0.6093750
## [7] {breathes=TRUE,legs=TRUE}        => {hair=TRUE} 0.4158416 0.5753425
## [8] {backbone=TRUE,breathes=TRUE}    => {hair=TRUE} 0.3861386 0.5652174
## [9] {predator=FALSE,breathes=TRUE}   => {hair=TRUE} 0.2277228 0.5609756
## [10] {breathes=TRUE,venomous=FALSE}  => {hair=TRUE} 0.4059406 0.5466667
## [11] {breathes=TRUE,tail=TRUE}       => {hair=TRUE} 0.3267327 0.5409836
## [12] {breathes=TRUE,fins=FALSE}     => {hair=TRUE} 0.4059406 0.5394737
##      lift
## [1] 2.176971
## [2] 1.899060
## [3] 1.806798
## [4] 1.683333
## [5] 1.551910
## [6] 1.431323
## [7] 1.351386
## [8] 1.327604
## [9] 1.317640
## [10] 1.284031
## [11] 1.270682
## [12] 1.267136
##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,legs=TRUE}            => {hair=TRUE} 0.3762376 1.0000000
## [2] {legs=TRUE,type=mammal}            => {hair=TRUE} 0.3762376 1.0000000
## [3] {eggs=FALSE,legs=TRUE}             => {hair=TRUE} 0.3663366 0.9736842
## [4] {toothed=TRUE,legs=TRUE}          => {hair=TRUE} 0.3663366 0.8809524
## [5] {legs=TRUE,catSize=TRUE}            => {hair=TRUE} 0.2871287 0.7837838
## [6] {feathers=FALSE,legs=TRUE}          => {hair=TRUE} 0.4158416 0.7241379
## [7] {airborne=FALSE,legs=TRUE}         => {hair=TRUE} 0.3564356 0.6666667
## [8] {aquatic=FALSE,legs=TRUE}          => {hair=TRUE} 0.3861386 0.6500000

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## [9] {backbone=TRUE,legs=TRUE} => {hair=TRUE} 0.3762376 0.5937500
## [10] {predator=FALSE,legs=TRUE} => {hair=TRUE} 0.2277228 0.5897436
## [11] {legs=TRUE,tail=TRUE} => {hair=TRUE} 0.3267327 0.5789474
## [12] {breathes=TRUE,legs=TRUE} => {hair=TRUE} 0.4158416 0.5753425
## [13] {venomous=FALSE,legs=TRUE} => {hair=TRUE} 0.3960396 0.5405405
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.287026
## [4] 2.069214
## [5] 1.840981
## [6] 1.700882
## [7] 1.565891
## [8] 1.526744
## [9] 1.394622
## [10] 1.385212
## [11] 1.359853
## [12] 1.351386
## [13] 1.269642
## lhs rhs support confidence
## [1] {milk=TRUE,aquatic=FALSE} => {hair=TRUE} 0.3465347 1.0000000
## [2] {aquatic=FALSE,type=mammal} => {hair=TRUE} 0.3465347 1.0000000
## [3] {eggs=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3465347 0.9722222
## [4] {aquatic=FALSE,toothed=TRUE} => {hair=TRUE} 0.3465347 0.9210526
## [5] {aquatic=FALSE,catsize=TRUE} => {hair=TRUE} 0.2574257 0.8387097
## [6] {feathers=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3861386 0.7647059
## [7] {airborne=FALSE,aquatic=FALSE} => {hair=TRUE} 0.3267327 0.7173913
## [8] {aquatic=FALSE,backbone=TRUE} => {hair=TRUE} 0.3465347 0.6603774
## [9] {aquatic=FALSE,legs=TRUE} => {hair=TRUE} 0.3861386 0.6500000
## [10] {aquatic=FALSE,tail=TRUE} => {hair=TRUE} 0.2970297 0.6122449
## [11] {aquatic=FALSE,breathes=TRUE} => {hair=TRUE} 0.3861386 0.6093750
## [12] {aquatic=FALSE,venomous=FALSE} => {hair=TRUE} 0.3663366 0.6065574
## lift
## [1] 2.348837
## [2] 2.348837
## [3] 2.283592
## [4] 2.163403
## [5] 1.969992
## [6] 1.796170
## [7] 1.685035
## [8] 1.551119
## [9] 1.526744
## [10] 1.438064
## [11] 1.431323
## [12] 1.424705
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {eggs=TRUE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {backbone=FALSE} 0.1287129
## [6] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [7] {tail=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1584158

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## [8] {aquatic=FALSE,tail=FALSE}      => {backbone=FALSE} 0.1089109
## [9] {fins=FALSE,tail=FALSE}          => {backbone=FALSE} 0.1683168
## [10] {airborne=FALSE,toothed=FALSE}   => {backbone=FALSE} 0.1188119
## [11] {toothed=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1683168
## [12] {toothed=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1683168
## [13] {milk=FALSE,toothed=FALSE}       => {backbone=FALSE} 0.1782178
## [14] {toothed=FALSE}                 => {backbone=FALSE} 0.1782178
## [15] {feathers=FALSE,milk=FALSE}      => {backbone=FALSE} 0.1782178
## [16] {feathers=FALSE,eggs=TRUE}       => {backbone=FALSE} 0.1683168
## [17] {milk=FALSE,aquatic=FALSE}       => {backbone=FALSE} 0.1188119
## [18] {feathers=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1683168
## [19] {milk=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1782178
## [20] {eggs=TRUE,aquatic=FALSE}        => {backbone=FALSE} 0.1089109
## [21] {eggs=TRUE,fins=FALSE}           => {backbone=FALSE} 0.1683168
## [22] {hair=FALSE,feathers=FALSE}      => {backbone=FALSE} 0.1386139
## [23] {milk=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [24] {fins=FALSE,catsize=FALSE}       => {backbone=FALSE} 0.1683168
## [25] {aquatic=FALSE,catsize=FALSE}    => {backbone=FALSE} 0.1188119
## [26] {milk=FALSE,legs=TRUE}           => {backbone=FALSE} 0.1386139
## [27] {eggs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1584158
## [28] {hair=FALSE,fins=FALSE}          => {backbone=FALSE} 0.1386139
## [29] {eggs=TRUE,legs=TRUE}            => {backbone=FALSE} 0.1287129
## [30] {domestic=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1584158
## [31] {legs=TRUE,catsize=FALSE}        => {backbone=FALSE} 0.1287129
## [32] {milk=FALSE,airborne=FALSE}      => {backbone=FALSE} 0.1188119
## [33] {milk=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [34] {airborne=FALSE,catsize=FALSE}   => {backbone=FALSE} 0.1089109
## [35] {eggs=TRUE,airborne=FALSE}       => {backbone=FALSE} 0.1089109
## [36] {eggs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1584158
## [37] {eggs=TRUE}                     => {backbone=FALSE} 0.1683168
## [38] {feathers=FALSE,fins=FALSE}      => {backbone=FALSE} 0.1782178
## [39] {hair=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1386139
## [40] {feathers=FALSE,legs=TRUE}       => {backbone=FALSE} 0.1386139
## [41] {feathers=FALSE,domestic=FALSE}  => {backbone=FALSE} 0.1683168
## [42] {fins=FALSE,domestic=FALSE}      => {backbone=FALSE} 0.1683168
## [43] {feathers=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [44] {aquatic=FALSE,domestic=FALSE}   => {backbone=FALSE} 0.1089109
## [45] {legs=TRUE,domestic=FALSE}       => {backbone=FALSE} 0.1287129
## [46] {aquatic=FALSE}                 => {backbone=FALSE} 0.1188119
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.8500000 4.769444
## [4] 0.8500000 4.769444
## [5] 0.8125000 4.559028
## [6] 0.8000000 4.488889
## [7] 0.6956522 3.903382
## [8] 0.6875000 3.857639
## [9] 0.6800000 3.815556
## [10] 0.6666667 3.740741
## [11] 0.5483871 3.077061
## [12] 0.4722222 2.649691
## [13] 0.4615385 2.589744
## [14] 0.4500000 2.525000

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## [15] 0.4500000 2.525000
## [16] 0.4358974 2.445869
## [17] 0.4000000 2.244444
## [18] 0.3953488 2.218346
## [19] 0.3829787 2.148936
## [20] 0.3793103 2.128352
## [21] 0.3695652 2.073671
## [22] 0.3684211 2.067251
## [23] 0.3541667 1.987269
## [24] 0.3541667 1.987269
## [25] 0.3529412 1.980392
## [26] 0.3500000 1.963889
## [27] 0.3478261 1.951691
## [28] 0.3255814 1.826873
## [29] 0.3250000 1.823611
## [30] 0.3200000 1.795556
## [31] 0.3170732 1.779133
## [32] 0.3157895 1.771930
## [33] 0.3090909 1.734343
## [34] 0.3055556 1.714506
## [35] 0.2972973 1.668168
## [36] 0.2962963 1.662551
## [37] 0.2881356 1.616761
## [38] 0.2812500 1.578125
## [39] 0.2592593 1.454733
## [40] 0.2413793 1.354406
## [41] 0.2394366 1.343505
## [42] 0.2361111 1.324846
## [43] 0.2352941 1.320261
## [44] 0.2075472 1.164570
## [45] 0.1969697 1.105219
## [46] 0.1846154 1.035897
##
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {backbone=TRUE} 0.1287129 1.0000000 1.2168675
## [2] {fins=TRUE}      => {backbone=TRUE} 0.1683168 1.0000000 1.2168675
## [3] {type=bird}      => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [4] {feathers=TRUE}   => {backbone=TRUE} 0.1980198 1.0000000 1.2168675
## [5] {milk=TRUE}       => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [6] {type=mammal}     => {backbone=TRUE} 0.4059406 1.0000000 1.2168675
## [7] {toothed=TRUE}    => {backbone=TRUE} 0.6039604 1.0000000 1.2168675
## [8] {tail=TRUE}       => {backbone=TRUE} 0.7326733 0.9866667 1.2006426
## [9] {catsize=TRUE}    => {backbone=TRUE} 0.4257426 0.9772727 1.1892114
## [10] {domestic=TRUE}   => {backbone=TRUE} 0.1188119 0.9230769 1.1232623
## [11] {breathes=TRUE}   => {backbone=TRUE} 0.6831683 0.8625000 1.0495482
## [12] {legs=FALSE}      => {backbone=TRUE} 0.1881188 0.8260870 1.0052383
## [13] {legs=TRUE}       => {backbone=TRUE} 0.6336634 0.8205128 0.9984554
## [14] {aquatic=FALSE}   => {backbone=TRUE} 0.5247525 0.8153846 0.9922150
## [15] {predator=FALSE}  => {backbone=TRUE} 0.3564356 0.8000000 0.9734940
## [16] {feathers=FALSE}  => {backbone=TRUE} 0.6237624 0.7777778 0.9464525
## [17] {airborne=TRUE}   => {backbone=TRUE} 0.1782178 0.7500000 0.9126506
## [18] {eggs=TRUE}       => {backbone=TRUE} 0.4158416 0.7118644 0.8662446
## [19] {catsize=FALSE}   => {backbone=TRUE} 0.3960396 0.7017544 0.8539421
## [20] {breathes=FALSE}  => {backbone=TRUE} 0.1386139 0.6666667 0.8112450
## [21] {toothed=FALSE}   => {backbone=TRUE} 0.2178218 0.5500000 0.6692771

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##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139 0.3500000
## [2] {eggs=TRUE,legs=TRUE}      => {backbone=FALSE} 0.1287129 0.3250000
## [3] {legs=TRUE,catsize=FALSE}   => {backbone=FALSE} 0.1287129 0.3170732
## [4] {feathers=FALSE,legs=TRUE} => {backbone=FALSE} 0.1386139 0.2413793
## [5] {legs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1287129 0.1969697
##      lift
## [1] 1.963889
## [2] 1.823611
## [3] 1.779133
## [4] 1.354406
## [5] 1.105219
##      lhs                                rhs      support
## [1] {aquatic=FALSE,tail=FALSE}   => {backbone=FALSE} 0.1089109
## [2] {milk=FALSE,aquatic=FALSE}   => {backbone=FALSE} 0.1188119
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109
## [4] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [5] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
## [6] {aquatic=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1089109
##      confidence lift
## [1] 0.6875000 3.857639
## [2] 0.4000000 2.244444
## [3] 0.3793103 2.128352
## [4] 0.3529412 1.980392
## [5] 0.2352941 1.320261
## [6] 0.2075472 1.164570
##      lhs                                rhs      support
## [1] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [2] {feathers=FALSE,milk=FALSE}    => {backbone=FALSE} 0.1782178
## [3] {feathers=FALSE,eggs=TRUE}     => {backbone=FALSE} 0.1683168
## [4] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {hair=FALSE,feathers=FALSE}     => {backbone=FALSE} 0.1386139
## [6] {feathers=FALSE,fins=FALSE}     => {backbone=FALSE} 0.1782178
## [7] {feathers=FALSE,legs=TRUE}      => {backbone=FALSE} 0.1386139
## [8] {feathers=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [9] {feathers=FALSE,aquatic=FALSE} => {backbone=FALSE} 0.1188119
##      confidence lift
## [1] 0.9000000 5.050000
## [2] 0.4500000 2.525000
## [3] 0.4358974 2.445869
## [4] 0.3953488 2.218346
## [5] 0.3684211 2.067251
## [6] 0.2812500 1.578125
## [7] 0.2413793 1.354406
## [8] 0.2394366 1.343505
## [9] 0.2352941 1.320261
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,tail=FALSE}      => {backbone=FALSE} 0.1683168 0.8500000
## [2] {feathers=FALSE,eggs=TRUE}    => {backbone=FALSE} 0.1683168 0.4358974
## [3] {eggs=TRUE,aquatic=FALSE}    => {backbone=FALSE} 0.1089109 0.3793103
## [4] {eggs=TRUE,fins=FALSE}       => {backbone=FALSE} 0.1683168 0.3695652
## [5] {eggs=TRUE,catsize=FALSE}     => {backbone=FALSE} 0.1584158 0.3478261
## [6] {eggs=TRUE,legs=TRUE}         => {backbone=FALSE} 0.1287129 0.3250000
## [7] {eggs=TRUE,airborne=FALSE}    => {backbone=FALSE} 0.1089109 0.2972973

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## [8] {eggs=TRUE,domestic=FALSE} => {backbone=FALSE} 0.1584158 0.2962963
## lift
## [1] 4.769444
## [2] 2.445869
## [3] 2.128352
## [4] 2.073671
## [5] 1.951691
## [6] 1.823611
## [7] 1.668168
## [8] 1.662551
## lhs rhs support
## [1] {tail=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [2] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [3] {feathers=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [4] {milk=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {fins=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [6] {aquatic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1188119
## [7] {eggs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [8] {domestic=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1584158
## [9] {legs=TRUE,catsize=FALSE} => {backbone=FALSE} 0.1287129
## [10] {airborne=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1089109
## confidence lift
## [1] 0.8000000 4.488889
## [2] 0.5483871 3.077061
## [3] 0.3953488 2.218346
## [4] 0.3541667 1.987269
## [5] 0.3541667 1.987269
## [6] 0.3529412 1.980392
## [7] 0.3478261 1.951691
## [8] 0.3200000 1.795556
## [9] 0.3170732 1.779133
## [10] 0.3055556 1.714506
## lhs rhs support
## [1] {toothed=FALSE,tail=FALSE} => {backbone=FALSE} 0.1683168
## [2] {feathers=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## [3] {airborne=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1188119
## [4] {toothed=FALSE,catsize=FALSE} => {backbone=FALSE} 0.1683168
## [5] {toothed=FALSE,domestic=FALSE} => {backbone=FALSE} 0.1683168
## [6] {milk=FALSE,toothed=FALSE} => {backbone=FALSE} 0.1782178
## confidence lift
## [1] 1.0000000 5.611111
## [2] 0.9000000 5.050000
## [3] 0.6666667 3.740741
## [4] 0.5483871 3.077061
## [5] 0.4722222 2.649691
## [6] 0.4615385 2.589744
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2673267

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## [7] {eggs=TRUE,aquatic=FALSE}      => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE}     => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE}          => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE}         => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE}         => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE}        => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE}        => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE}       => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE}     => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE}       => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE}    => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.1584158
## [23] {hair=FALSE,predator=FALSE}   => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}    => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}    => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}     => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}       => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}    => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}   => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}      => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}     => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                 => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                 => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}   => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}              => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}   => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}    => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}    => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}              => {toothed=FALSE} 0.1881188
## confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750

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## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375
## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964

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##	lhs	rhs	support	confidence	lift
## [1]	{type=fish}	=> {toothed=TRUE}	0.1287129	1.0000000	1.6557377
## [2]	{fins=TRUE}	=> {toothed=TRUE}	0.1683168	1.0000000	1.6557377
## [3]	{eggs=FALSE}	=> {toothed=TRUE}	0.4059406	0.9761905	1.6163154
## [4]	{legs=FALSE}	=> {toothed=TRUE}	0.1881188	0.8260870	1.3677833
## [5]	{catsize=TRUE}	=> {toothed=TRUE}	0.3465347	0.7954545	1.3170641
## [6]	{feathers=FALSE}	=> {toothed=TRUE}	0.6039604	0.7530864	1.2469136
## [7]	{tail=TRUE}	=> {toothed=TRUE}	0.5148515	0.6933333	1.1479781
## [8]	{breathes=FALSE}	=> {toothed=TRUE}	0.1386139	0.6666667	1.1038251
## [9]	{predator=TRUE}	=> {toothed=TRUE}	0.3663366	0.6607143	1.0939696
## [10]	{aquatic=TRUE}	=> {toothed=TRUE}	0.2277228	0.6388889	1.0578324
## [11]	{domestic=FALSE}	=> {toothed=TRUE}	0.5148515	0.5909091	0.9783905
## [12]	{breathes=TRUE}	=> {toothed=TRUE}	0.4653465	0.5875000	0.9727459
## [13]	{predator=FALSE}	=> {toothed=TRUE}	0.2376238	0.5333333	0.8830601
## [14]	{catsize=FALSE}	=> {toothed=TRUE}	0.2574257	0.4561404	0.7552488

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## [15] {hair=FALSE}      => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}       => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs          support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}  => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs          support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}  => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}   => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift
## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                      rhs          support  confidence
## [1] {eggs=TRUE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}   => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE} => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                      rhs          support
## [1] {eggs=TRUE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}   => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}   => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}    => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}    => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                      rhs          support  confidence
## [1] {tail=FALSE,catsize=FALSE}   => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2178218 0.6470588

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## [4] {fins=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}=> {toothed=FALSE} 0.1683168 0.5862069
## lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
## lhs rhs support confidence
## [1] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307 0.8611111
## [4] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {legs=FALSE} 0.1287129 1.0000000
## [2] {hair=FALSE,fins=TRUE} => {legs=FALSE} 0.1485149 1.0000000

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## [3] {eggs=TRUE,fins=TRUE}      => {legs=FALSE} 0.1287129 1.0000000
## [4] {milk=FALSE,fins=TRUE}     => {legs=FALSE} 0.1287129 1.0000000
## [5] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [6] {breathes=FALSE,tail=TRUE}  => {legs=FALSE} 0.1386139 1.0000000
## [7] {backbone=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [8] {fins=TRUE}                => {legs=FALSE} 0.1584158 0.9411765
## [9] {hair=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1782178 0.7826087
## [10] {breathes=FALSE}           => {legs=FALSE} 0.1584158 0.7619048
## [11] {milk=FALSE,toothed=TRUE}   => {legs=FALSE} 0.1584158 0.7619048
## [12] {eggs=TRUE,toothed=TRUE}    => {legs=FALSE} 0.1485149 0.7500000
## [13] {aquatic=TRUE,toothed=TRUE}  => {legs=FALSE} 0.1683168 0.7391304
## [14] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [15] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [16] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [17] {hair=FALSE,feathers=FALSE}  => {legs=FALSE} 0.2178218 0.5789474
## [18] {hair=FALSE,airborne=FALSE}  => {legs=FALSE} 0.2178218 0.5500000
## [19] {hair=FALSE,aquatic=TRUE}    => {legs=FALSE} 0.1683168 0.5312500
## [20] {milk=FALSE,airborne=FALSE}  => {legs=FALSE} 0.1980198 0.5263158
## [21] {eggs=TRUE,airborne=FALSE}   => {legs=FALSE} 0.1881188 0.5135135
## [22] {feathers=FALSE,milk=FALSE}  => {legs=FALSE} 0.1980198 0.5000000
## [23] {feathers=FALSE,eggs=TRUE}   => {legs=FALSE} 0.1881188 0.4871795
## [24] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [25] {hair=FALSE,predator=TRUE}   => {legs=FALSE} 0.1584158 0.4444444
## [26] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [27] {hair=FALSE,tail=TRUE}       => {legs=FALSE} 0.1782178 0.4285714
## [28] {milk=FALSE,predator=TRUE}   => {legs=FALSE} 0.1386139 0.4117647
## [29] {hair=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1782178 0.4090909
## [30] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [31] {milk=FALSE,tail=TRUE}       => {legs=FALSE} 0.1584158 0.4000000
## [32] {eggs=TRUE,predator=TRUE}    => {legs=FALSE} 0.1287129 0.3939394
## [33] {hair=FALSE,domestic=FALSE}  => {legs=FALSE} 0.2079208 0.3888889
## [34] {eggs=TRUE,tail=TRUE}        => {legs=FALSE} 0.1485149 0.3846154
## [35] {milk=FALSE,backbone=TRUE}   => {legs=FALSE} 0.1584158 0.3809524
## [36] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [37] {feathers=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3617021
## [38] {eggs=TRUE,backbone=TRUE}    => {legs=FALSE} 0.1485149 0.3571429
## [39] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [40] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [41] {milk=FALSE,domestic=FALSE}  => {legs=FALSE} 0.1881188 0.3454545
## [42] {predator=TRUE,tail=TRUE}     => {legs=FALSE} 0.1386139 0.3333333
## [43] {eggs=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1782178 0.3333333
## [44] {feathers=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3272727
## [45] {tail=TRUE,catsize=FALSE}     => {legs=FALSE} 0.1188119 0.3243243
## [46] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [47] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [48] {airborne=FALSE,tail=TRUE}    => {legs=FALSE} 0.1782178 0.3157895
## [49] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## [50] {feathers=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3098592
## [51] {predator=TRUE}              => {legs=FALSE} 0.1683168 0.3035714
## [52] {feathers=FALSE,backbone=TRUE} => {legs=FALSE} 0.1881188 0.3015873
## [53] {backbone=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.3000000
## [54] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000
## [55] {tail=TRUE,domestic=FALSE}    => {legs=FALSE} 0.1683168 0.2615385
## [56] {backbone=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.2535211

```

```
##      lift
## [1] 4.391304
## [2] 4.391304
## [3] 4.391304
## [4] 4.391304
## [5] 4.391304
## [6] 4.391304
## [7] 4.391304
## [8] 4.132992
## [9] 3.436673
## [10] 3.345756
## [11] 3.345756
## [12] 3.293478
## [13] 3.245747
## [14] 2.702341
## [15] 2.634783
## [16] 2.549790
## [17] 2.542334
## [18] 2.415217
## [19] 2.332880
## [20] 2.311213
## [21] 2.254994
## [22] 2.195652
## [23] 2.139353
## [24] 2.026756
## [25] 1.951691
## [26] 1.951691
## [27] 1.881988
## [28] 1.808184
## [29] 1.796443
## [30] 1.780259
## [31] 1.756522
## [32] 1.729908
## [33] 1.707729
## [34] 1.688963
## [35] 1.672878
## [36] 1.633974
## [37] 1.588344
## [38] 1.568323
## [39] 1.523514
## [40] 1.520067
## [41] 1.516996
## [42] 1.463768
## [43] 1.463768
## [44] 1.437154
## [45] 1.424207
## [46] 1.420716
## [47] 1.414149
## [48] 1.386728
## [49] 1.383562
## [50] 1.360686
## [51] 1.333075
## [52] 1.324362
## [53] 1.317391
```

```

## [54] 1.317391
## [55] 1.148495
## [56] 1.113288
##      lhs                rhs      support  confidence lift
## [1] {type=bird}          => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [2] {feathers=TRUE}     => {legs=TRUE} 0.1980198 1.0000000 1.2948718
## [3] {airborne=TRUE}    => {legs=TRUE} 0.2376238 1.0000000 1.2948718
## [4] {hair=TRUE}         => {legs=TRUE} 0.4158416 0.9767442 1.2647585
## [5] {milk=TRUE}          => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [6] {type=mammal}        => {legs=TRUE} 0.3762376 0.9268293 1.2001251
## [7] {domestic=TRUE}     => {legs=TRUE} 0.1188119 0.9230769 1.1952663
## [8] {aquatic=FALSE}      => {legs=TRUE} 0.5940594 0.9230769 1.1952663
## [9] {eggs=FALSE}         => {legs=TRUE} 0.3762376 0.9047619 1.1715507
## [10] {toothed=FALSE}     => {legs=TRUE} 0.3564356 0.9000000 1.1653846
## [11] {predator=FALSE}    => {legs=TRUE} 0.3861386 0.8666667 1.1222222
## [12] {catsize=TRUE}      => {legs=TRUE} 0.3663366 0.8409091 1.0888695
## [13] {tail=FALSE}         => {legs=TRUE} 0.2079208 0.8076923 1.0458580
## [14] {backbone=FALSE}    => {legs=TRUE} 0.1386139 0.7777778 1.0071225
## [15] {tail=TRUE}          => {legs=TRUE} 0.5643564 0.7600000 0.9841026
## [16] {catsize=FALSE}      => {legs=TRUE} 0.4059406 0.7192982 0.9313990
## [17] {airborne=FALSE}     => {legs=TRUE} 0.5346535 0.7012987 0.9080919
## [18] {toothed=TRUE}        => {legs=TRUE} 0.4158416 0.6885246 0.8915511
## [19] {eggs=TRUE}           => {legs=TRUE} 0.3960396 0.6779661 0.8778792
## [20] {milk=FALSE}          => {legs=TRUE} 0.3960396 0.6666667 0.8632479
## [21] {aquatic=TRUE}       => {legs=TRUE} 0.1782178 0.5000000 0.6474359
##      lhs                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {aquatic=TRUE,tail=TRUE}    => {legs=FALSE} 0.1584158 0.6153846
## [3] {hair=FALSE,tail=TRUE}      => {legs=FALSE} 0.1782178 0.4285714
## [4] {milk=FALSE,tail=TRUE}      => {legs=FALSE} 0.1584158 0.4000000
## [5] {eggs=TRUE,tail=TRUE}       => {legs=FALSE} 0.1485149 0.3846154
## [6] {predator=TRUE,tail=TRUE}   => {legs=FALSE} 0.1386139 0.3333333
## [7] {feathers=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3272727
## [8] {tail=TRUE,catsize=FALSE}    => {legs=FALSE} 0.1188119 0.3243243
## [9] {airborne=FALSE,tail=TRUE}  => {legs=FALSE} 0.1782178 0.3157895
## [10] {tail=TRUE,domestic=FALSE} => {legs=FALSE} 0.1683168 0.2615385
##      lift
## [1] 4.391304
## [2] 2.702341
## [3] 1.881988
## [4] 1.756522
## [5] 1.688963
## [6] 1.463768
## [7] 1.437154
## [8] 1.424207
## [9] 1.386728
## [10] 1.148495
##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [2] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [3] {feathers=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.3720930
## [4] {tail=TRUE,catsize=FALSE}      => {legs=FALSE} 0.1188119 0.3243243
## [5] {backbone=TRUE,catsize=FALSE}  => {legs=FALSE} 0.1188119 0.3000000
## [6] {domestic=FALSE,catsize=FALSE} => {legs=FALSE} 0.1485149 0.3000000

```



```

## lift
## [1] 2.026756
## [2] 1.951691
## [3] 1.633974
## [4] 1.424207
## [5] 1.317391
## [6] 1.317391
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [2] {hair=FALSE,airborne=FALSE} => {legs=FALSE} 0.2178218 0.5500000
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [5] {airborne=FALSE,catsize=FALSE} => {legs=FALSE} 0.1584158 0.4444444
## [6] {airborne=FALSE,predator=TRUE} => {legs=FALSE} 0.1683168 0.3469388
## [7] {airborne=FALSE,domestic=FALSE} => {legs=FALSE} 0.2178218 0.3235294
## [8] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## [9] {airborne=FALSE,tail=TRUE} => {legs=FALSE} 0.1782178 0.3157895
## [10] {feathers=FALSE,airborne=FALSE} => {legs=FALSE} 0.2277228 0.3150685
## lift
## [1] 2.549790
## [2] 2.415217
## [3] 2.311213
## [4] 2.254994
## [5] 1.951691
## [6] 1.523514
## [7] 1.420716
## [8] 1.414149
## [9] 1.386728
## [10] 1.383562
## lhs rhs support confidence
## [1] {toothed=TRUE,breathes=FALSE} => {legs=FALSE} 0.1386139 1.0000000
## [2] {hair=FALSE,toothed=TRUE} => {legs=FALSE} 0.1782178 0.7826087
## [3] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [4] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [5] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [6] {toothed=TRUE,catsize=FALSE} => {legs=FALSE} 0.1188119 0.4615385
## [7] {predator=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.4054054
## [8] {toothed=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3461538
## [9] {airborne=FALSE,toothed=TRUE} => {legs=FALSE} 0.1881188 0.3220339
## lift
## [1] 4.391304
## [2] 3.436673
## [3] 3.345756
## [4] 3.293478
## [5] 3.245747
## [6] 2.026756
## [7] 1.780259
## [8] 1.520067
## [9] 1.414149
## lhs rhs support confidence
## [1] {eggs=TRUE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {eggs=TRUE,toothed=TRUE} => {legs=FALSE} 0.1485149 0.7500000
## [3] {eggs=TRUE,airborne=FALSE} => {legs=FALSE} 0.1881188 0.5135135
## [4] {feathers=FALSE,eggs=TRUE} => {legs=FALSE} 0.1881188 0.4871795

```

```

## [5] {eggs=TRUE,predator=TRUE} => {legs=FALSE} 0.1287129 0.3939394
## [6] {eggs=TRUE,tail=TRUE}      => {legs=FALSE} 0.1485149 0.3846154
## [7] {eggs=TRUE,backbone=TRUE} => {legs=FALSE} 0.1485149 0.3571429
## [8] {eggs=TRUE,domestic=FALSE} => {legs=FALSE} 0.1782178 0.3333333
## lift
## [1] 4.391304
## [2] 3.293478
## [3] 2.254994
## [4] 2.139353
## [5] 1.729908
## [6] 1.688963
## [7] 1.568323
## [8] 1.463768
## lhs rhs support confidence
## [1] {milk=FALSE,fins=TRUE} => {legs=FALSE} 0.1287129 1.0000000
## [2] {milk=FALSE,toothed=TRUE} => {legs=FALSE} 0.1584158 0.7619048
## [3] {milk=FALSE,airborne=FALSE} => {legs=FALSE} 0.1980198 0.5263158
## [4] {feathers=FALSE,milk=FALSE} => {legs=FALSE} 0.1980198 0.5000000
## [5] {milk=FALSE,predator=TRUE} => {legs=FALSE} 0.1386139 0.4117647
## [6] {milk=FALSE,tail=TRUE} => {legs=FALSE} 0.1584158 0.4000000
## [7] {milk=FALSE,backbone=TRUE} => {legs=FALSE} 0.1584158 0.3809524
## [8] {milk=FALSE,domestic=FALSE} => {legs=FALSE} 0.1881188 0.3454545
## lift
## [1] 4.391304
## [2] 3.345756
## [3] 2.311213
## [4] 2.195652
## [5] 1.808184
## [6] 1.756522
## [7] 1.672878
## [8] 1.516996
## lhs rhs support confidence
## [1] {aquatic=TRUE,toothed=TRUE} => {legs=FALSE} 0.1683168 0.7391304
## [2] {aquatic=TRUE,tail=TRUE} => {legs=FALSE} 0.1584158 0.6153846
## [3] {feathers=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.6000000
## [4] {airborne=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1782178 0.5806452
## [5] {hair=FALSE,aquatic=TRUE} => {legs=FALSE} 0.1683168 0.5312500
## lift
## [1] 3.245747
## [2] 2.702341
## [3] 2.634783
## [4] 2.549790
## [5] 2.332880
## [1] "Número de reglas con consecuente negado"
## lhs rhs support confidence
## [1] {type=fish} => {fins=TRUE} 0.1287129 1.0000000
## [2] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [3] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [4] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [5] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [6] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [7] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [8] {legs=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.8333333
## [9] {breathes=FALSE,legs=FALSE} => {fins=TRUE} 0.1287129 0.8125000

```

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## [10] {venomous=FALSE,legs=FALSE}      => {fins=TRUE} 0.1485149 0.7894737
## [11] {aquatic=TRUE,toothed=TRUE}      => {fins=TRUE} 0.1683168 0.7391304
## [12] {predator=TRUE,legs=FALSE}      => {fins=TRUE} 0.1188119 0.7058824
## [13] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [14] {hair=FALSE,toothed=TRUE}       => {fins=TRUE} 0.1485149 0.6521739
## [15] {aquatic=TRUE,breathes=FALSE}    => {fins=TRUE} 0.1287129 0.6500000
## [16] {eggs=TRUE,toothed=TRUE}         => {fins=TRUE} 0.1287129 0.6500000
## [17] {breathes=FALSE}                 => {fins=TRUE} 0.1287129 0.6190476
## [18] {milk=FALSE,toothed=TRUE}        => {fins=TRUE} 0.1287129 0.6190476
## [19] {aquatic=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.6153846
## [20] {feathers=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5666667
## [21] {aquatic=TRUE,backbone=TRUE}     => {fins=TRUE} 0.1683168 0.5666667
## [22] {airborne=FALSE,aquatic=TRUE}    => {fins=TRUE} 0.1683168 0.5483871
## [23] {aquatic=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.5000000
## [24] {hair=FALSE,feathers=FALSE}      => {fins=TRUE} 0.1485149 0.3947368
## [25] {hair=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1485149 0.3750000
## [26] {hair=FALSE,tail=TRUE}           => {fins=TRUE} 0.1485149 0.3571429
## [27] {predator=TRUE,toothed=TRUE}     => {fins=TRUE} 0.1287129 0.3513514
## [28] {eggs=TRUE,airborne=FALSE}       => {fins=TRUE} 0.1287129 0.3513514
## [29] {milk=FALSE,airborne=FALSE}      => {fins=TRUE} 0.1287129 0.3421053
## [30] {hair=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1485149 0.3409091
## [31] {eggs=TRUE,tail=TRUE}            => {fins=TRUE} 0.1287129 0.3333333
## [32] {feathers=FALSE,eggs=TRUE}       => {fins=TRUE} 0.1287129 0.3333333
## [33] {milk=FALSE,tail=TRUE}           => {fins=TRUE} 0.1287129 0.3250000
## [34] {feathers=FALSE,milk=FALSE}      => {fins=TRUE} 0.1287129 0.3250000
## [35] {eggs=TRUE,backbone=TRUE}        => {fins=TRUE} 0.1287129 0.3095238
## [36] {milk=FALSE,backbone=TRUE}       => {fins=TRUE} 0.1287129 0.3095238
## [37] {toothed=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.3076923
## [38] {toothed=TRUE,domestic=FALSE}    => {fins=TRUE} 0.1584158 0.3076923
## [39] {hair=FALSE,predator=TRUE}       => {fins=TRUE} 0.1089109 0.3055556
## [40] {feathers=FALSE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2909091
## [41] {airborne=FALSE,toothed=TRUE}    => {fins=TRUE} 0.1683168 0.2881356
## [42] {predator=TRUE,tail=TRUE}        => {fins=TRUE} 0.1188119 0.2857143
## [43] {toothed=TRUE,venomous=FALSE}    => {fins=TRUE} 0.1584158 0.2807018
## [44] {airborne=FALSE,tail=TRUE}       => {fins=TRUE} 0.1584158 0.2807018
## [45] {feathers=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2765957
## [46] {predator=TRUE,backbone=TRUE}    => {fins=TRUE} 0.1287129 0.2765957
## [47] {feathers=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2698413
## [48] {hair=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1386139 0.2692308
## [49] {airborne=FALSE,predator=TRUE}   => {fins=TRUE} 0.1287129 0.2653061
## [50] {airborne=FALSE,backbone=TRUE}   => {fins=TRUE} 0.1683168 0.2615385
## [51] {hair=FALSE,domestic=FALSE}     => {fins=TRUE} 0.1386139 0.2592593
## [52] {hair=FALSE}                     => {fins=TRUE} 0.1485149 0.2586207
## [53] {predator=TRUE,venomous=FALSE}   => {fins=TRUE} 0.1188119 0.2400000
## [54] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [55] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [56] {milk=FALSE,venomous=FALSE}      => {fins=TRUE} 0.1188119 0.2307692
## [57] {tail=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1485149 0.2307692
## [58] {eggs=TRUE,venomous=FALSE}       => {fins=TRUE} 0.1188119 0.2264151
## [59] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [60] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [61] {backbone=TRUE,domestic=FALSE}   => {fins=TRUE} 0.1584158 0.2253521
## [62] {eggs=TRUE,domestic=FALSE}       => {fins=TRUE} 0.1188119 0.2222222
## [63] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781

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## [64] {milk=FALSE,domestic=FALSE}    => {fins=TRUE} 0.1188119 0.2181818
## [65] {backbone=TRUE,tail=TRUE}         => {fins=TRUE} 0.1584158 0.2162162
## [66] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
##      lift
## [1] 5.941176
## [2] 5.516807
## [3] 5.516807
## [4] 5.516807
## [5] 5.281046
## [6] 5.003096
## [7] 5.003096
## [8] 4.950980
## [9] 4.827206
## [10] 4.690402
## [11] 4.391304
## [12] 4.193772
## [13] 3.960784
## [14] 3.874680
## [15] 3.861765
## [16] 3.861765
## [17] 3.677871
## [18] 3.677871
## [19] 3.656109
## [20] 3.366667
## [21] 3.366667
## [22] 3.258065
## [23] 2.970588
## [24] 2.345201
## [25] 2.227941
## [26] 2.121849
## [27] 2.087440
## [28] 2.087440
## [29] 2.032508
## [30] 2.025401
## [31] 1.980392
## [32] 1.980392
## [33] 1.930882
## [34] 1.930882
## [35] 1.838936
## [36] 1.838936
## [37] 1.828054
## [38] 1.828054
## [39] 1.815359
## [40] 1.728342
## [41] 1.711864
## [42] 1.697479
## [43] 1.667699
## [44] 1.667699
## [45] 1.643304
## [46] 1.643304
## [47] 1.603175
## [48] 1.599548
## [49] 1.576230
## [50] 1.553846

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## [51] 1.540305
## [52] 1.536511
## [53] 1.425882
## [54] 1.397924
## [55] 1.383562
## [56] 1.371041
## [57] 1.371041
## [58] 1.345172
## [59] 1.338857
## [60] 1.338857
## [61] 1.338857
## [62] 1.320261
## [63] 1.302176
## [64] 1.296257
## [65] 1.284579
## [66] 1.100218
##      lhs                      rhs      support  confidence lift
## [1] {backbone=FALSE} => {fins=FALSE} 0.1782178 1.0000000 1.2023810
## [2] {type=bird}      => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [3] {feathers=TRUE}  => {fins=FALSE} 0.1980198 1.0000000 1.2023810
## [4] {airborne=TRUE} => {fins=FALSE} 0.2376238 1.0000000 1.2023810
## [5] {toothed=FALSE}  => {fins=FALSE} 0.3960396 1.0000000 1.2023810
## [6] {legs=TRUE}      => {fins=FALSE} 0.7623762 0.9871795 1.1869658
## [7] {hair=TRUE}     => {fins=FALSE} 0.4059406 0.9534884 1.1464563
## [8] {breathes=TRUE} => {fins=FALSE} 0.7524752 0.9500000 1.1422619
## [9] {domestic=TRUE}  => {fins=FALSE} 0.1188119 0.9230769 1.1098901
## [10] {predator=FALSE} => {fins=FALSE} 0.4059406 0.9111111 1.0955026
## [11] {eggs=FALSE}    => {fins=FALSE} 0.3762376 0.9047619 1.0878685
## [12] {milk=TRUE}     => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [13] {type=mammal}    => {fins=FALSE} 0.3663366 0.9024390 1.0850755
## [14] {catsize=FALSE} => {fins=FALSE} 0.4752475 0.8421053 1.0125313
## [15] {venomous=FALSE} => {fins=FALSE} 0.7623762 0.8279570 0.9955197
## [16] {catsize=TRUE}  => {fins=FALSE} 0.3564356 0.8181818 0.9837662
## [17] {domestic=FALSE} => {fins=FALSE} 0.7128713 0.8181818 0.9837662
## [18] {backbone=TRUE}  => {fins=FALSE} 0.6534653 0.7951807 0.9561102
## [19] {feathers=FALSE} => {fins=FALSE} 0.6336634 0.7901235 0.9500294
## [20] {tail=TRUE}      => {fins=FALSE} 0.5841584 0.7866667 0.9458730
## [21] {eggs=TRUE}      => {fins=FALSE} 0.4554455 0.7796610 0.9374496
## [22] {airborne=FALSE} => {fins=FALSE} 0.5940594 0.7792208 0.9369202
## [23] {predator=TRUE}  => {fins=FALSE} 0.4257426 0.7678571 0.9232568
## [24] {hair=FALSE}    => {fins=FALSE} 0.4257426 0.7413793 0.8914204
## [25] {toothed=TRUE}   => {fins=FALSE} 0.4356436 0.7213115 0.8672912
## [26] {aquatic=TRUE}   => {fins=FALSE} 0.1881188 0.5277778 0.6345899
##      lhs                      rhs      support  confidence
## [1] {venomous=FALSE,legs=FALSE} => {fins=TRUE} 0.1485149 0.7894737
## [2] {breathes=FALSE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.6666667
## [3] {aquatic=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.5000000
## [4] {toothed=TRUE,venomous=FALSE}  => {fins=TRUE} 0.1584158 0.2807018
## [5] {hair=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1386139 0.2692308
## [6] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## [7] {milk=FALSE,venomous=FALSE}    => {fins=TRUE} 0.1188119 0.2307692
## [8] {eggs=TRUE,venomous=FALSE}     => {fins=TRUE} 0.1188119 0.2264151
## [9] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781

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## [11] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 4.690402
## [2] 3.960784
## [3] 2.970588
## [4] 1.667699
## [5] 1.599548
## [6] 1.425882
## [7] 1.371041
## [8] 1.345172
## [9] 1.338857
## [10] 1.302176
## [11] 1.100218
## lhs rhs support confidence
## [1] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [2] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
## [3] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [4] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [5] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [6] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## [8] {milk=FALSE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2181818
## [9] {venomous=FALSE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.1851852
## lift
## [1] 1.828054
## [2] 1.540305
## [3] 1.397924
## [4] 1.371041
## [5] 1.338857
## [6] 1.338857
## [7] 1.320261
## [8] 1.296257
## [9] 1.100218
## lhs rhs support confidence
## [1] {backbone=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {backbone=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [4] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [5] {eggs=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [6] {milk=FALSE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.3095238
## [7] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [8] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [9] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [10] {backbone=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [11] {backbone=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2162162
## lift
## [1] 5.516807
## [2] 5.003096
## [3] 3.366667
## [4] 2.025401
## [5] 1.838936
## [6] 1.838936
## [7] 1.643304
## [8] 1.603175

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## [9] 1.553846
## [10] 1.338857
## [11] 1.284579
##      lhs                                rhs      support  confidence
## [1] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [2] {hair=FALSE,feathers=FALSE}   => {fins=TRUE} 0.1485149 0.3947368
## [3] {feathers=FALSE,eggs=TRUE}    => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,milk=FALSE}   => {fins=TRUE} 0.1287129 0.3250000
## [5] {feathers=FALSE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.2909091
## [6] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {feathers=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2698413
## [8] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [9] {feathers=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## [10] {feathers=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2191781
##      lift
## [1] 3.366667
## [2] 2.345201
## [3] 1.980392
## [4] 1.930882
## [5] 1.728342
## [6] 1.643304
## [7] 1.603175
## [8] 1.383562
## [9] 1.338857
## [10] 1.302176
##      lhs                                rhs      support  confidence
## [1] {breathes=FALSE,tail=TRUE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {legs=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.8333333
## [3] {aquatic=TRUE,tail=TRUE}     => {fins=TRUE} 0.1584158 0.6153846
## [4] {hair=FALSE,tail=TRUE}       => {fins=TRUE} 0.1485149 0.3571429
## [5] {eggs=TRUE,tail=TRUE}         => {fins=TRUE} 0.1287129 0.3333333
## [6] {milk=FALSE,tail=TRUE}        => {fins=TRUE} 0.1287129 0.3250000
## [7] {toothed=TRUE,tail=TRUE}      => {fins=TRUE} 0.1584158 0.3076923
## [8] {feathers=FALSE,tail=TRUE}    => {fins=TRUE} 0.1584158 0.2909091
## [9] {predator=TRUE,tail=TRUE}     => {fins=TRUE} 0.1188119 0.2857143
## [10] {airborne=FALSE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2807018
## [11] {tail=TRUE,domestic=FALSE} => {fins=TRUE} 0.1485149 0.2307692
## [12] {backbone=TRUE,tail=TRUE}   => {fins=TRUE} 0.1584158 0.2162162
##      lift
## [1] 5.516807
## [2] 4.950980
## [3] 3.656109
## [4] 2.121849
## [5] 1.980392
## [6] 1.930882
## [7] 1.828054
## [8] 1.728342
## [9] 1.697479
## [10] 1.667699
## [11] 1.371041
## [12] 1.284579
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,toothed=TRUE}    => {fins=TRUE} 0.1287129 0.6500000
## [2] {eggs=TRUE,airborne=FALSE}    => {fins=TRUE} 0.1287129 0.3513514

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## [3] {eggs=TRUE,tail=TRUE}      => {fins=TRUE} 0.1287129 0.3333333
## [4] {feathers=FALSE,eggs=TRUE} => {fins=TRUE} 0.1287129 0.3333333
## [5] {eggs=TRUE,backbone=TRUE}  => {fins=TRUE} 0.1287129 0.3095238
## [6] {eggs=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2264151
## [7] {eggs=TRUE,domestic=FALSE} => {fins=TRUE} 0.1188119 0.2222222
## lift
## [1] 3.861765
## [2] 2.087440
## [3] 1.980392
## [4] 1.980392
## [5] 1.838936
## [6] 1.345172
## [7] 1.320261
## lhs rhs support confidence
## [1] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [2] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [3] {eggs=TRUE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3513514
## [4] {milk=FALSE,airborne=FALSE} => {fins=TRUE} 0.1287129 0.3421053
## [5] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [6] {airborne=FALSE,tail=TRUE} => {fins=TRUE} 0.1584158 0.2807018
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {airborne=FALSE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.2615385
## [9] {airborne=FALSE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.2352941
## [10] {feathers=FALSE,airborne=FALSE} => {fins=TRUE} 0.1683168 0.2328767
## [11] {airborne=FALSE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2253521
## lift
## [1] 3.258065
## [2] 2.227941
## [3] 2.087440
## [4] 2.032508
## [5] 1.711864
## [6] 1.667699
## [7] 1.576230
## [8] 1.553846
## [9] 1.397924
## [10] 1.383562
## [11] 1.338857
## lhs rhs support confidence
## [1] {predator=TRUE,legs=FALSE} => {fins=TRUE} 0.1188119 0.7058824
## [2] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [3] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [4] {predator=TRUE,tail=TRUE} => {fins=TRUE} 0.1188119 0.2857143
## [5] {feathers=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [6] {predator=TRUE,backbone=TRUE} => {fins=TRUE} 0.1287129 0.2765957
## [7] {airborne=FALSE,predator=TRUE} => {fins=TRUE} 0.1287129 0.2653061
## [8] {predator=TRUE,venomous=FALSE} => {fins=TRUE} 0.1188119 0.2400000
## lift
## [1] 4.193772
## [2] 2.087440
## [3] 1.815359
## [4] 1.697479
## [5] 1.643304
## [6] 1.643304
## [7] 1.576230

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## [8] 1.425882
##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [2] {hair=FALSE,feathers=FALSE} => {fins=TRUE} 0.1485149 0.3947368
## [3] {hair=FALSE,airborne=FALSE} => {fins=TRUE} 0.1485149 0.3750000
## [4] {hair=FALSE,tail=TRUE} => {fins=TRUE} 0.1485149 0.3571429
## [5] {hair=FALSE,backbone=TRUE} => {fins=TRUE} 0.1485149 0.3409091
## [6] {hair=FALSE,predator=TRUE} => {fins=TRUE} 0.1089109 0.3055556
## [7] {hair=FALSE,venomous=FALSE} => {fins=TRUE} 0.1386139 0.2692308
## [8] {hair=FALSE,domestic=FALSE} => {fins=TRUE} 0.1386139 0.2592593
##      lift
## [1] 3.874680
## [2] 2.345201
## [3] 2.227941
## [4] 2.121849
## [5] 2.025401
## [6] 1.815359
## [7] 1.599548
## [8] 1.540305
##      lhs                                rhs      support  confidence
## [1] {toothed=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.9285714
## [2] {toothed=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8421053
## [3] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [4] {hair=FALSE,toothed=TRUE} => {fins=TRUE} 0.1485149 0.6521739
## [5] {eggs=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6500000
## [6] {milk=FALSE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.6190476
## [7] {predator=TRUE,toothed=TRUE} => {fins=TRUE} 0.1287129 0.3513514
## [8] {toothed=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.3076923
## [9] {toothed=TRUE,domestic=FALSE} => {fins=TRUE} 0.1584158 0.3076923
## [10] {airborne=FALSE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.2881356
## [11] {toothed=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.2807018
##      lift
## [1] 5.516807
## [2] 5.003096
## [3] 4.391304
## [4] 3.874680
## [5] 3.861765
## [6] 3.677871
## [7] 2.087440
## [8] 1.828054
## [9] 1.828054
## [10] 1.711864
## [11] 1.667699
##      lhs                                rhs      support  confidence
## [1] {aquatic=TRUE,legs=FALSE} => {fins=TRUE} 0.1584158 0.8888889
## [2] {aquatic=TRUE,toothed=TRUE} => {fins=TRUE} 0.1683168 0.7391304
## [3] {aquatic=TRUE,breathes=FALSE} => {fins=TRUE} 0.1287129 0.6500000
## [4] {aquatic=TRUE,tail=TRUE} => {fins=TRUE} 0.1584158 0.6153846
## [5] {feathers=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [6] {aquatic=TRUE,backbone=TRUE} => {fins=TRUE} 0.1683168 0.5666667
## [7] {airborne=FALSE,aquatic=TRUE} => {fins=TRUE} 0.1683168 0.5483871
## [8] {aquatic=TRUE,venomous=FALSE} => {fins=TRUE} 0.1584158 0.5000000
##      lift
## [1] 5.281046

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## [2] 4.391304
## [3] 3.861765
## [4] 3.656109
## [5] 3.366667
## [6] 3.366667
## [7] 3.258065
## [8] 2.970588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {type=bird}                        => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE}        => {feathers=TRUE} 0.1584158
## [4] {airborne=TRUE,tail=TRUE}         => {feathers=TRUE} 0.1584158
## [5] {airborne=TRUE,backbone=TRUE}      => {feathers=TRUE} 0.1584158
## [6] {toothed=FALSE,tail=TRUE}          => {feathers=TRUE} 0.1980198
## [7] {airborne=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1584158
## [8] {eggs=TRUE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [9] {milk=FALSE,airborne=TRUE}          => {feathers=TRUE} 0.1584158
## [10] {airborne=TRUE,venomous=FALSE}     => {feathers=TRUE} 0.1584158
## [11] {toothed=FALSE,breathes=TRUE}      => {feathers=TRUE} 0.1980198
## [12] {hair=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [13] {toothed=FALSE,legs=TRUE}          => {feathers=TRUE} 0.1980198
## [14] {toothed=FALSE,venomous=FALSE}     => {feathers=TRUE} 0.1980198
## [15] {hair=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [16] {hair=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [17] {hair=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139
## [18] {predator=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1089109
## [19] {aquatic=FALSE,toothed=FALSE}      => {feathers=TRUE} 0.1386139
## [20] {eggs=TRUE,toothed=FALSE}          => {feathers=TRUE} 0.1980198
## [21] {milk=FALSE,toothed=FALSE}         => {feathers=TRUE} 0.1980198
## [22] {eggs=TRUE,tail=TRUE}              => {feathers=TRUE} 0.1980198
## [23] {eggs=TRUE,breathes=TRUE}          => {feathers=TRUE} 0.1980198
## [24] {milk=FALSE,breathes=TRUE}         => {feathers=TRUE} 0.1980198
## [25] {hair=FALSE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [26] {eggs=TRUE,legs=TRUE}              => {feathers=TRUE} 0.1980198
## [27] {milk=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1980198
## [28] {milk=FALSE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [29] {eggs=TRUE,aquatic=FALSE}          => {feathers=TRUE} 0.1386139
## [30] {hair=FALSE,tail=TRUE}             => {feathers=TRUE} 0.1980198
## [31] {eggs=TRUE,backbone=TRUE}          => {feathers=TRUE} 0.1980198
## [32] {milk=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1980198
## [33] {milk=FALSE,aquatic=FALSE}         => {feathers=TRUE} 0.1386139
## [34] {hair=FALSE,fins=FALSE}            => {feathers=TRUE} 0.1980198
## [35] {hair=FALSE,backbone=TRUE}         => {feathers=TRUE} 0.1980198
## [36] {eggs=TRUE,fins=FALSE}             => {feathers=TRUE} 0.1980198
## [37] {milk=FALSE,fins=FALSE}            => {feathers=TRUE} 0.1980198
## [38] {eggs=TRUE,predator=FALSE}         => {feathers=TRUE} 0.1089109
## [39] {milk=FALSE,predator=FALSE}        => {feathers=TRUE} 0.1089109
## [40] {hair=FALSE,venomous=FALSE}        => {feathers=TRUE} 0.1980198
## [41] {milk=FALSE,venomous=FALSE}        => {feathers=TRUE} 0.1980198
## [42] {tail=TRUE,catSize=FALSE}          => {feathers=TRUE} 0.1386139
## [43] {eggs=TRUE,venomous=FALSE}         => {feathers=TRUE} 0.1980198
## [44] {hair=FALSE,eggs=TRUE}             => {feathers=TRUE} 0.1980198
## [45] {hair=FALSE,milk=FALSE}            => {feathers=TRUE} 0.1980198

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## [46] {legs=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [47] {backbone=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [48] {hair=FALSE}                => {feathers=TRUE} 0.1980198
## [49] {eggs=TRUE,milk=FALSE}      => {feathers=TRUE} 0.1980198
## [50] {legs=TRUE,catsize=FALSE}    => {feathers=TRUE} 0.1386139
## [51] {breathes=TRUE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [52] {fins=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1980198
## [53] {predator=FALSE,tail=TRUE}    => {feathers=TRUE} 0.1089109
## [54] {breathes=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [55] {backbone=TRUE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [56] {predator=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1089109
## [57] {backbone=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [58] {fins=FALSE,catsize=FALSE}     => {feathers=TRUE} 0.1386139
## [59] {backbone=TRUE,breathes=TRUE}  => {feathers=TRUE} 0.1980198
## [60] {aquatic=FALSE,tail=TRUE}      => {feathers=TRUE} 0.1386139
## [61] {predator=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1089109
## [62] {venomous=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [63] {venomous=FALSE,catsize=FALSE} => {feathers=TRUE} 0.1386139
## [64] {breathes=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [65] {backbone=TRUE,tail=TRUE}      => {feathers=TRUE} 0.1980198
## [66] {venomous=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198
## [67] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [68] {predator=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1089109
## [69] {breathes=TRUE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [70] {aquatic=FALSE,backbone=TRUE}  => {feathers=TRUE} 0.1386139
## [71] {breathes=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [72] {fins=FALSE,legs=TRUE}         => {feathers=TRUE} 0.1980198
## [73] {venomous=FALSE,fins=FALSE}     => {feathers=TRUE} 0.1980198
## [74] {legs=TRUE,domestic=FALSE}     => {feathers=TRUE} 0.1683168
## [75] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
## [76] {backbone=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198
## [77] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139
## [78] {aquatic=FALSE}                => {feathers=TRUE} 0.1386139
## [79] {venomous=FALSE}               => {feathers=TRUE} 0.1980198
## [80] {domestic=FALSE}               => {feathers=TRUE} 0.1683168
## confidence lift
## [1] 1.0000000 5.0500000
## [2] 0.9090909 4.5909091
## [3] 0.8888889 4.4888889
## [4] 0.8888889 4.4888889
## [5] 0.8888889 4.4888889
## [6] 0.8695652 4.3913043
## [7] 0.7272727 3.6727273
## [8] 0.7272727 3.6727273
## [9] 0.7272727 3.6727273
## [10] 0.7272727 3.6727273
## [11] 0.6060606 3.0606061
## [12] 0.5714286 2.8857143
## [13] 0.5555556 2.8055556
## [14] 0.5555556 2.8055556
## [15] 0.5555556 2.8055556
## [16] 0.5405405 2.7297297
## [17] 0.5384615 2.7192308
## [18] 0.5238095 2.6452381

```

##	[19]	0.5185185	2.6185185
##	[20]	0.5128205	2.5897436
##	[21]	0.5128205	2.5897436
##	[22]	0.5128205	2.5897436
##	[23]	0.5128205	2.5897436
##	[24]	0.5128205	2.5897436
##	[25]	0.5000000	2.5250000
##	[26]	0.5000000	2.5250000
##	[27]	0.5000000	2.5250000
##	[28]	0.5000000	2.5250000
##	[29]	0.4827586	2.4379310
##	[30]	0.4761905	2.4047619
##	[31]	0.4761905	2.4047619
##	[32]	0.4761905	2.4047619
##	[33]	0.4666667	2.3566667
##	[34]	0.4651163	2.3488372
##	[35]	0.4545455	2.2954545
##	[36]	0.4347826	2.1956522
##	[37]	0.4255319	2.1489362
##	[38]	0.4230769	2.1365385
##	[39]	0.4230769	2.1365385
##	[40]	0.3846154	1.9423077
##	[41]	0.3846154	1.9423077
##	[42]	0.3783784	1.9108108
##	[43]	0.3773585	1.9056604
##	[44]	0.3703704	1.8703704
##	[45]	0.3571429	1.8035714
##	[46]	0.3508772	1.7719298
##	[47]	0.3500000	1.7675000
##	[48]	0.3448276	1.7413793
##	[49]	0.3448276	1.7413793
##	[50]	0.3414634	1.7243902
##	[51]	0.3414634	1.7243902
##	[52]	0.3389831	1.7118644
##	[53]	0.3333333	1.6833333
##	[54]	0.3278689	1.6557377
##	[55]	0.3125000	1.5781250
##	[56]	0.3055556	1.5430556
##	[57]	0.3030303	1.5303030
##	[58]	0.2916667	1.4729167
##	[59]	0.2898551	1.4637681
##	[60]	0.2857143	1.4428571
##	[61]	0.2820513	1.4243590
##	[62]	0.2816901	1.4225352
##	[63]	0.2800000	1.4140000
##	[64]	0.2739726	1.3835616
##	[65]	0.2702703	1.3648649
##	[66]	0.2702703	1.3648649
##	[67]	0.2682927	1.3548780
##	[68]	0.2682927	1.3548780
##	[69]	0.2666667	1.3466667
##	[70]	0.2641509	1.3339623
##	[71]	0.2631579	1.3289474
##	[72]	0.2597403	1.3116883

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## [73] 0.2597403 1.3116883
## [74] 0.2575758 1.3007576
## [75] 0.2558140 1.2918605
## [76] 0.2531646 1.2784810
## [77] 0.2295082 1.1590164
## [78] 0.2153846 1.0876923
## [79] 0.2150538 1.0860215
## [80] 0.1931818 0.9755682

##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {feathers=FALSE} 0.1287129 1.0000000 1.2469136
## [2] {fins=TRUE}      => {feathers=FALSE} 0.1683168 1.0000000 1.2469136
## [3] {backbone=FALSE} => {feathers=FALSE} 0.1782178 1.0000000 1.2469136
## [4] {breathes=FALSE} => {feathers=FALSE} 0.2079208 1.0000000 1.2469136
## [5] {legs=FALSE}      => {feathers=FALSE} 0.2277228 1.0000000 1.2469136
## [6] {tail=FALSE}      => {feathers=FALSE} 0.2574257 1.0000000 1.2469136
## [7] {eggs=FALSE}     => {feathers=FALSE} 0.4158416 1.0000000 1.2469136
## [8] {hair=TRUE}       => {feathers=FALSE} 0.4257426 1.0000000 1.2469136
## [9] {airborne=FALSE}  => {feathers=FALSE} 0.7227723 0.9480519 1.1821388
## [10] {catsize=TRUE}    => {feathers=FALSE} 0.3762376 0.8636364 1.0768799
## [11] {predator=TRUE}   => {feathers=FALSE} 0.4653465 0.8392857 1.0465168
## [12] {aquatic=TRUE}    => {feathers=FALSE} 0.2970297 0.8333333 1.0390947
## [13] {aquatic=FALSE}    => {feathers=FALSE} 0.5049505 0.7846154 0.9783476
## [14] {predator=FALSE}  => {feathers=FALSE} 0.3366337 0.7555556 0.9421125
## [15] {catsize=FALSE}   => {feathers=FALSE} 0.4257426 0.7543860 0.9406541
## [16] {breathes=TRUE}    => {feathers=FALSE} 0.5940594 0.7500000 0.9351852
## [17] {legs=TRUE}        => {feathers=FALSE} 0.5742574 0.7435897 0.9271921
## [18] {milk=FALSE}       => {feathers=FALSE} 0.3960396 0.6666667 0.8312757
## [19] {eggs=TRUE}         => {feathers=FALSE} 0.3861386 0.6610169 0.8242310
## [20] {hair=FALSE}      => {feathers=FALSE} 0.3762376 0.6551724 0.8169434
## [21] {toothed=FALSE}   => {feathers=FALSE} 0.1980198 0.5000000 0.6234568

##      lhs                      rhs      support  confidence
## [1] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [2] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139 0.5185185
## [3] {eggs=TRUE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4827586
## [4] {milk=FALSE,aquatic=FALSE}     => {feathers=TRUE} 0.1386139 0.4666667
## [5] {aquatic=FALSE,tail=TRUE}       => {feathers=TRUE} 0.1386139 0.2857143
## [6] {aquatic=FALSE,backbone=TRUE}   => {feathers=TRUE} 0.1386139 0.2641509
## [7] {aquatic=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1386139 0.2295082

##      lift
## [1] 2.719231
## [2] 2.618519
## [3] 2.437931
## [4] 2.356667
## [5] 1.442857
## [6] 1.333962
## [7] 1.159016

##      lhs                      rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [2] {hair=FALSE,predator=FALSE}      => {feathers=TRUE} 0.1089109
## [3] {eggs=TRUE,predator=FALSE}       => {feathers=TRUE} 0.1089109
## [4] {milk=FALSE,predator=FALSE}       => {feathers=TRUE} 0.1089109
## [5] {predator=FALSE,tail=TRUE}         => {feathers=TRUE} 0.1089109
## [6] {predator=FALSE,backbone=TRUE}    => {feathers=TRUE} 0.1089109
## [7] {predator=FALSE,legs=TRUE}        => {feathers=TRUE} 0.1089109

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## [8] {predator=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1089109
## [9] {predator=FALSE,fins=FALSE}      => {feathers=TRUE} 0.1089109
## [10] {predator=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1089109
##      confidence lift
## [1] 0.5238095 2.645238
## [2] 0.5000000 2.525000
## [3] 0.4230769 2.136538
## [4] 0.4230769 2.136538
## [5] 0.3333333 1.683333
## [6] 0.3055556 1.543056
## [7] 0.2820513 1.424359
## [8] 0.2682927 1.354878
## [9] 0.2682927 1.354878
## [10] 0.2558140 1.291860
##      lhs                                rhs                support  confidence
## [1] {tail=TRUE,catsize=FALSE}            => {feathers=TRUE} 0.1386139 0.3783784
## [2] {backbone=TRUE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.3500000
## [3] {legs=TRUE,catsize=FALSE}             => {feathers=TRUE} 0.1386139 0.3414634
## [4] {breathes=TRUE,catsize=FALSE}         => {feathers=TRUE} 0.1386139 0.3414634
## [5] {fins=FALSE,catsize=FALSE}             => {feathers=TRUE} 0.1386139 0.2916667
## [6] {venomous=FALSE,catsize=FALSE}        => {feathers=TRUE} 0.1386139 0.2800000
##      lift
## [1] 1.910811
## [2] 1.767500
## [3] 1.724390
## [4] 1.724390
## [5] 1.472917
## [6] 1.414000
##      lhs                                rhs                support
## [1] {toothed=FALSE,breathes=TRUE}        => {feathers=TRUE} 0.1980198
## [2] {hair=FALSE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [3] {eggs=TRUE,breathes=TRUE}             => {feathers=TRUE} 0.1980198
## [4] {milk=FALSE,breathes=TRUE}            => {feathers=TRUE} 0.1980198
## [5] {breathes=TRUE,catsize=FALSE}          => {feathers=TRUE} 0.1386139
## [6] {breathes=TRUE,tail=TRUE}             => {feathers=TRUE} 0.1980198
## [7] {backbone=TRUE,breathes=TRUE}          => {feathers=TRUE} 0.1980198
## [8] {breathes=TRUE,legs=TRUE}             => {feathers=TRUE} 0.1980198
## [9] {predator=FALSE,breathes=TRUE}        => {feathers=TRUE} 0.1089109
## [10] {breathes=TRUE,venomous=FALSE}       => {feathers=TRUE} 0.1980198
## [11] {breathes=TRUE,fins=FALSE}          => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.6060606 3.060606
## [2] 0.5405405 2.729730
## [3] 0.5128205 2.589744
## [4] 0.5128205 2.589744
## [5] 0.3414634 1.724390
## [6] 0.3278689 1.655738
## [7] 0.2898551 1.463768
## [8] 0.2739726 1.383562
## [9] 0.2682927 1.354878
## [10] 0.2666667 1.346667
## [11] 0.2631579 1.328947
##      lhs                                rhs                support  confidence
## [1] {toothed=FALSE,legs=TRUE}            => {feathers=TRUE} 0.1980198 0.5555556

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## [2] {hair=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5555556
## [3] {eggs=TRUE,legs=TRUE}       => {feathers=TRUE} 0.1980198 0.5000000
## [4] {milk=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [5] {legs=TRUE,tail=TRUE}       => {feathers=TRUE} 0.1980198 0.3508772
## [6] {legs=TRUE,catSize=FALSE}   => {feathers=TRUE} 0.1386139 0.3414634
## [7] {backbone=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.3125000
## [8] {predator=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1089109 0.2820513
## [9] {breathes=TRUE,legs=TRUE}   => {feathers=TRUE} 0.1980198 0.2739726
## [10] {venomous=FALSE,legs=TRUE}  => {feathers=TRUE} 0.1980198 0.2702703
## [11] {fins=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.2597403
## [12] {legs=TRUE,domestic=FALSE} => {feathers=TRUE} 0.1683168 0.2575758
## lift
## [1] 2.805556
## [2] 2.805556
## [3] 2.525000
## [4] 2.525000
## [5] 1.771930
## [6] 1.724390
## [7] 1.578125
## [8] 1.424359
## [9] 1.383562
## [10] 1.364865
## [11] 1.311688
## [12] 1.300758
## lhs                rhs                support  confidence
## [1] {milk=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {milk=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {milk=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [4] {milk=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [5] {milk=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5000000
## [6] {milk=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [7] {milk=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.4666667
## [8] {milk=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4255319
## [9] {milk=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.4230769
## [10] {milk=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## [12] {eggs=TRUE,milk=FALSE}     => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.525000
## [5] 2.525000
## [6] 2.404762
## [7] 2.356667
## [8] 2.148936
## [9] 2.136538
## [10] 1.942308
## [11] 1.803571
## [12] 1.741379
## lhs                rhs                support  confidence
## [1] {eggs=TRUE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.7272727
## [2] {eggs=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5128205
## [3] {eggs=TRUE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.5128205

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## [4] {eggs=TRUE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5128205
## [5] {eggs=TRUE,legs=TRUE}      => {feathers=TRUE} 0.1980198 0.5000000
## [6] {eggs=TRUE,aquatic=FALSE}  => {feathers=TRUE} 0.1386139 0.4827586
## [7] {eggs=TRUE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4761905
## [8] {eggs=TRUE,fins=FALSE}     => {feathers=TRUE} 0.1980198 0.4347826
## [9] {eggs=TRUE,predator=FALSE}  => {feathers=TRUE} 0.1089109 0.4230769
## [10] {eggs=TRUE,venomous=FALSE}  => {feathers=TRUE} 0.1980198 0.3773585
## [11] {hair=FALSE,eggs=TRUE}     => {feathers=TRUE} 0.1980198 0.3703704
## [12] {eggs=TRUE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3448276
## lift
## [1] 3.672727
## [2] 2.589744
## [3] 2.589744
## [4] 2.589744
## [5] 2.525000
## [6] 2.437931
## [7] 2.404762
## [8] 2.195652
## [9] 2.136538
## [10] 1.905660
## [11] 1.870370
## [12] 1.741379
## lhs          rhs          support  confidence
## [1] {hair=FALSE,airborne=TRUE} => {feathers=TRUE} 0.1584158 0.8888889
## [2] {hair=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1980198 0.5714286
## [3] {hair=FALSE,legs=TRUE}     => {feathers=TRUE} 0.1980198 0.5555556
## [4] {hair=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198 0.5405405
## [5] {hair=FALSE,aquatic=FALSE} => {feathers=TRUE} 0.1386139 0.5384615
## [6] {hair=FALSE,predator=FALSE} => {feathers=TRUE} 0.1089109 0.5000000
## [7] {hair=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198 0.4761905
## [8] {hair=FALSE,fins=FALSE}    => {feathers=TRUE} 0.1980198 0.4651163
## [9] {hair=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198 0.4545455
## [10] {hair=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198 0.3846154
## [11] {hair=FALSE,eggs=TRUE}    => {feathers=TRUE} 0.1980198 0.3703704
## [12] {hair=FALSE,milk=FALSE}    => {feathers=TRUE} 0.1980198 0.3571429
## lift
## [1] 4.488889
## [2] 2.885714
## [3] 2.805556
## [4] 2.729730
## [5] 2.719231
## [6] 2.525000
## [7] 2.404762
## [8] 2.348837
## [9] 2.295455
## [10] 1.942308
## [11] 1.870370
## [12] 1.803571
## lhs          rhs          support
## [1] {toothed=FALSE,backbone=TRUE} => {feathers=TRUE} 0.1980198
## [2] {toothed=FALSE,tail=TRUE}     => {feathers=TRUE} 0.1980198
## [3] {airborne=TRUE,toothed=FALSE} => {feathers=TRUE} 0.1584158
## [4] {toothed=FALSE,breathes=TRUE} => {feathers=TRUE} 0.1980198
## [5] {hair=FALSE,toothed=FALSE}    => {feathers=TRUE} 0.1980198

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## [6] {toothed=FALSE,legs=TRUE}      => {feathers=TRUE} 0.1980198
## [7] {toothed=FALSE,venomous=FALSE} => {feathers=TRUE} 0.1980198
## [8] {predator=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1089109
## [9] {aquatic=FALSE,toothed=FALSE} => {feathers=TRUE} 0.1386139
## [10] {eggs=TRUE,toothed=FALSE}      => {feathers=TRUE} 0.1980198
## [11] {milk=FALSE,toothed=FALSE}     => {feathers=TRUE} 0.1980198
##      confidence lift
## [1] 0.9090909 4.590909
## [2] 0.8695652 4.391304
## [3] 0.7272727 3.672727
## [4] 0.6060606 3.060606
## [5] 0.5714286 2.885714
## [6] 0.5555556 2.805556
## [7] 0.5555556 2.805556
## [8] 0.5238095 2.645238
## [9] 0.5185185 2.618519
## [10] 0.5128205 2.589744
## [11] 0.5128205 2.589744
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs                                support
## [1] {catsize=FALSE,type=bird}              => {airborne=TRUE} 0.1287129
## [2] {feathers=TRUE,catsize=FALSE}           => {airborne=TRUE} 0.1287129
## [3] {type=bird}                             => {airborne=TRUE} 0.1584158
## [4] {feathers=TRUE}                         => {airborne=TRUE} 0.1584158
## [5] {toothed=FALSE,backbone=TRUE}            => {airborne=TRUE} 0.1584158
## [6] {predator=FALSE,toothed=FALSE}           => {airborne=TRUE} 0.1485149
## [7] {toothed=FALSE,tail=TRUE}                => {airborne=TRUE} 0.1584158
## [8] {toothed=FALSE,breathes=TRUE}            => {airborne=TRUE} 0.2178218
## [9] {aquatic=FALSE,toothed=FALSE}            => {airborne=TRUE} 0.1683168
## [10] {toothed=FALSE,catsize=FALSE}            => {airborne=TRUE} 0.1881188
## [11] {toothed=FALSE,legs=TRUE}                => {airborne=TRUE} 0.2178218
## [12] {eggs=TRUE,aquatic=FALSE}                => {airborne=TRUE} 0.1683168
## [13] {eggs=TRUE,predator=FALSE}               => {airborne=TRUE} 0.1485149
## [14] {milk=FALSE,predator=FALSE}              => {airborne=TRUE} 0.1485149
## [15] {milk=FALSE,aquatic=FALSE}               => {airborne=TRUE} 0.1683168
## [16] {eggs=TRUE,breathes=TRUE}                => {airborne=TRUE} 0.2178218
## [17] {milk=FALSE,breathes=TRUE}               => {airborne=TRUE} 0.2178218
## [18] {toothed=FALSE,venomous=FALSE}           => {airborne=TRUE} 0.1980198
## [19] {toothed=FALSE}                         => {airborne=TRUE} 0.2178218
## [20] {eggs=TRUE,legs=TRUE}                    => {airborne=TRUE} 0.2178218
## [21] {milk=FALSE,legs=TRUE}                   => {airborne=TRUE} 0.2178218
## [22] {predator=FALSE,catsize=FALSE}            => {airborne=TRUE} 0.1485149
## [23] {legs=TRUE,catsize=FALSE}                 => {airborne=TRUE} 0.2079208
## [24] {breathes=TRUE,catsize=FALSE}             => {airborne=TRUE} 0.2079208
## [25] {hair=FALSE,predator=FALSE}               => {airborne=TRUE} 0.1089109
## [26] {aquatic=FALSE,catsize=FALSE}             => {airborne=TRUE} 0.1683168
## [27] {hair=FALSE,aquatic=FALSE}               => {airborne=TRUE} 0.1287129
## [28] {hair=FALSE,legs=TRUE}                   => {airborne=TRUE} 0.1782178
## [29] {hair=FALSE,breathes=TRUE}               => {airborne=TRUE} 0.1782178
## [30] {eggs=TRUE,fins=FALSE}                   => {airborne=TRUE} 0.2178218
## [31] {milk=FALSE,fins=FALSE}                  => {airborne=TRUE} 0.2178218
## [32] {fins=FALSE,catsize=FALSE}               => {airborne=TRUE} 0.2079208
## [33] {predator=FALSE,legs=TRUE}               => {airborne=TRUE} 0.1683168
## [34] {hair=FALSE,fins=FALSE}                  => {airborne=TRUE} 0.1782178

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## [35] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [36] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [37] {eggs=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1881188
## [38] {eggs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1584158
## [39] {tail=TRUE,catsize=FALSE}      => {airborne=TRUE} 0.1485149
## [40] {milk=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [41] {milk=FALSE,catsize=FALSE}     => {airborne=TRUE} 0.1881188
## [42] {milk=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1980198
## [43] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
## [44] {hair=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1584158
## [45] {eggs=TRUE,backbone=TRUE}     => {airborne=TRUE} 0.1584158
## [46] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158
## [47] {venomous=FALSE,catsize=FALSE}=> {airborne=TRUE} 0.1881188
## [48] {eggs=TRUE,venomous=FALSE}    => {airborne=TRUE} 0.1980198
## [49] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [50] {hair=FALSE,venomous=FALSE}   => {airborne=TRUE} 0.1782178
## [51] {breathes=TRUE,legs=TRUE}     => {airborne=TRUE} 0.2376238
## [52] {aquatic=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1881188
## [53] {legs=TRUE,tail=TRUE}         => {airborne=TRUE} 0.1782178
## [54] {breathes=TRUE,fins=FALSE}    => {airborne=TRUE} 0.2376238
## [55] {fins=FALSE,legs=TRUE}        => {airborne=TRUE} 0.2376238
## [56] {fins=FALSE,tail=TRUE}        => {airborne=TRUE} 0.1782178
## [57] {aquatic=FALSE}               => {airborne=TRUE} 0.1881188
## [58] {venomous=FALSE}              => {airborne=TRUE} 0.2178218
##      confidence lift
## [1] 0.9285714 3.9077381
## [2] 0.9285714 3.9077381
## [3] 0.8000000 3.3666667
## [4] 0.8000000 3.3666667
## [5] 0.7272727 3.0606061
## [6] 0.7142857 3.0059524
## [7] 0.6956522 2.9275362
## [8] 0.6666667 2.8055556
## [9] 0.6296296 2.6496914
## [10] 0.6129032 2.5793011
## [11] 0.6111111 2.5717593
## [12] 0.5862069 2.4669540
## [13] 0.5769231 2.4278846
## [14] 0.5769231 2.4278846
## [15] 0.5666667 2.3847222
## [16] 0.5641026 2.3739316
## [17] 0.5641026 2.3739316
## [18] 0.5555556 2.3379630
## [19] 0.5500000 2.3145833
## [20] 0.5500000 2.3145833
## [21] 0.5500000 2.3145833
## [22] 0.5172414 2.1767241
## [23] 0.5121951 2.1554878
## [24] 0.5121951 2.1554878
## [25] 0.5000000 2.1041667
## [26] 0.5000000 2.1041667
## [27] 0.5000000 2.1041667
## [28] 0.5000000 2.1041667
## [29] 0.4864865 2.0472973

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## [30] 0.4782609 2.0126812
## [31] 0.4680851 1.9698582
## [32] 0.4375000 1.8411458
## [33] 0.4358974 1.8344017
## [34] 0.4186047 1.7616279
## [35] 0.4146341 1.7449187
## [36] 0.4146341 1.7449187
## [37] 0.4130435 1.7382246
## [38] 0.4102564 1.7264957
## [39] 0.4054054 1.7060811
## [40] 0.4000000 1.6833333
## [41] 0.3958333 1.6657986
## [42] 0.3846154 1.6185897
## [43] 0.3823529 1.6090686
## [44] 0.3809524 1.6031746
## [45] 0.3809524 1.6031746
## [46] 0.3809524 1.6031746
## [47] 0.3800000 1.5991667
## [48] 0.3773585 1.5880503
## [49] 0.3750000 1.5781250
## [50] 0.3461538 1.4567308
## [51] 0.3287671 1.3835616
## [52] 0.3166667 1.3326389
## [53] 0.3157895 1.3289474
## [54] 0.3157895 1.3289474
## [55] 0.3116883 1.3116883
## [56] 0.3050847 1.2838983
## [57] 0.2923077 1.2301282
## [58] 0.2365591 0.9955197
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {airborne=FALSE} 0.1287129 1.0000000 1.3116883
## [2] {fins=TRUE}       => {airborne=FALSE} 0.1683168 1.0000000 1.3116883
## [3] {breathes=FALSE} => {airborne=FALSE} 0.2079208 1.0000000 1.3116883
## [4] {legs=FALSE}     => {airborne=FALSE} 0.2277228 1.0000000 1.3116883
## [5] {toothed=TRUE}    => {airborne=FALSE} 0.5841584 0.9672131 1.2686821
## [6] {eggs=FALSE}      => {airborne=FALSE} 0.3960396 0.9523810 1.2492270
## [7] {milk=TRUE}       => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [8] {type=mammal}     => {airborne=FALSE} 0.3861386 0.9512195 1.2477035
## [9] {catsize=TRUE}    => {airborne=FALSE} 0.4059406 0.9318182 1.2222550
## [10] {predator=TRUE}  => {airborne=FALSE} 0.4851485 0.8750000 1.1477273
## [11] {aquatic=TRUE}   => {airborne=FALSE} 0.3069307 0.8611111 1.1295094
## [12] {hair=TRUE}      => {airborne=FALSE} 0.3663366 0.8604651 1.1286620
## [13] {backbone=TRUE}  => {airborne=FALSE} 0.6435644 0.7831325 1.0272258
## [14] {tail=FALSE}     => {airborne=FALSE} 0.1980198 0.7692308 1.0089910
## [15] {tail=TRUE}      => {airborne=FALSE} 0.5643564 0.7600000 0.9968831
## [16] {aquatic=FALSE}  => {airborne=FALSE} 0.4554455 0.7076923 0.9282717
## [17] {hair=FALSE}     => {airborne=FALSE} 0.3960396 0.6896552 0.9046126
## [18] {backbone=FALSE} => {airborne=FALSE} 0.1188119 0.6666667 0.8744589
## [19] {milk=FALSE}      => {airborne=FALSE} 0.3762376 0.6333333 0.8307359
## [20] {eggs=TRUE}      => {airborne=FALSE} 0.3663366 0.6271186 0.8225842
## [21] {predator=FALSE} => {airborne=FALSE} 0.2772277 0.6222222 0.8161616
## [22] {toothed=FALSE}  => {airborne=FALSE} 0.1782178 0.4500000 0.5902597
##      lhs                      rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727

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## [2] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [3] {milk=FALSE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [4] {backbone=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.3750000
## lift
## [1] 3.060606
## [2] 1.603175
## [3] 1.603175
## [4] 1.578125
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {airborne=TRUE} 0.1584158 0.6956522
## [2] {eggs=TRUE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.4102564
## [3] {tail=TRUE,catsize=FALSE} => {airborne=TRUE} 0.1485149 0.4054054
## [4] {milk=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.4000000
## [5] {hair=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [6] {legs=TRUE,tail=TRUE}     => {airborne=TRUE} 0.1782178 0.3157895
## [7] {fins=FALSE,tail=TRUE}    => {airborne=TRUE} 0.1782178 0.3050847
## lift
## [1] 2.927536
## [2] 1.726496
## [3] 1.706081
## [4] 1.683333
## [5] 1.603175
## [6] 1.328947
## [7] 1.283898
## lhs rhs support confidence
## [1] {aquatic=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1683168 0.6296296
## [2] {eggs=TRUE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5862069
## [3] {milk=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1683168 0.5666667
## [4] {aquatic=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1683168 0.5000000
## [5] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [6] {aquatic=FALSE,legs=TRUE}     => {airborne=TRUE} 0.1881188 0.3166667
## lift
## [1] 2.649691
## [2] 2.466954
## [3] 2.384722
## [4] 2.104167
## [5] 2.104167
## [6] 1.332639
## lhs rhs support confidence
## [1] {hair=FALSE,predator=FALSE} => {airborne=TRUE} 0.1089109 0.5000000
## [2] {hair=FALSE,aquatic=FALSE}    => {airborne=TRUE} 0.1287129 0.5000000
## [3] {hair=FALSE,legs=TRUE}       => {airborne=TRUE} 0.1782178 0.5000000
## [4] {hair=FALSE,breathes=TRUE}   => {airborne=TRUE} 0.1782178 0.4864865
## [5] {hair=FALSE,fins=FALSE}      => {airborne=TRUE} 0.1782178 0.4186047
## [6] {hair=FALSE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.3809524
## [7] {hair=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1782178 0.3461538
## lift
## [1] 2.104167
## [2] 2.104167
## [3] 2.104167
## [4] 2.047297
## [5] 1.761628
## [6] 1.603175
## [7] 1.456731

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##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,predator=FALSE} => {airborne=TRUE} 0.1485149 0.5769231
## [2] {milk=FALSE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5666667
## [3] {milk=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.5641026
## [4] {milk=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.5500000
## [5] {milk=FALSE,fins=FALSE}     => {airborne=TRUE} 0.2178218 0.4680851
## [6] {milk=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.4000000
## [7] {milk=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.3958333
## [8] {milk=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.3846154
## [9] {milk=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.3809524
##      lift
## [1] 2.427885
## [2] 2.384722
## [3] 2.373932
## [4] 2.314583
## [5] 1.969858
## [6] 1.683333
## [7] 1.665799
## [8] 1.618590
## [9] 1.603175
##      lhs                                rhs      support  confidence
## [1] {eggs=TRUE,aquatic=FALSE}  => {airborne=TRUE} 0.1683168 0.5862069
## [2] {eggs=TRUE,predator=FALSE}  => {airborne=TRUE} 0.1485149 0.5769231
## [3] {eggs=TRUE,breathes=TRUE}   => {airborne=TRUE} 0.2178218 0.5641026
## [4] {eggs=TRUE,legs=TRUE}       => {airborne=TRUE} 0.2178218 0.5500000
## [5] {eggs=TRUE,fins=FALSE}       => {airborne=TRUE} 0.2178218 0.4782609
## [6] {eggs=TRUE,catsize=FALSE}    => {airborne=TRUE} 0.1881188 0.4130435
## [7] {eggs=TRUE,tail=TRUE}       => {airborne=TRUE} 0.1584158 0.4102564
## [8] {eggs=TRUE,backbone=TRUE}    => {airborne=TRUE} 0.1584158 0.3809524
## [9] {eggs=TRUE,venomous=FALSE}  => {airborne=TRUE} 0.1980198 0.3773585
##      lift
## [1] 2.466954
## [2] 2.427885
## [3] 2.373932
## [4] 2.314583
## [5] 2.012681
## [6] 1.738225
## [7] 1.726496
## [8] 1.603175
## [9] 1.588050
##      lhs                                rhs      support
## [1] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149
## [2] {eggs=TRUE,predator=FALSE}     => {airborne=TRUE} 0.1485149
## [3] {milk=FALSE,predator=FALSE}    => {airborne=TRUE} 0.1485149
## [4] {predator=FALSE,catsize=FALSE} => {airborne=TRUE} 0.1485149
## [5] {hair=FALSE,predator=FALSE}     => {airborne=TRUE} 0.1089109
## [6] {predator=FALSE,legs=TRUE}      => {airborne=TRUE} 0.1683168
## [7] {predator=FALSE,breathes=TRUE} => {airborne=TRUE} 0.1683168
## [8] {predator=FALSE,fins=FALSE}    => {airborne=TRUE} 0.1683168
## [9] {predator=FALSE,domestic=FALSE}=> {airborne=TRUE} 0.1287129
##      confidence lift
## [1] 0.7142857 3.005952
## [2] 0.5769231 2.427885
## [3] 0.5769231 2.427885

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## [4] 0.5172414 2.176724
## [5] 0.5000000 2.104167
## [6] 0.4358974 1.834402
## [7] 0.4146341 1.744919
## [8] 0.4146341 1.744919
## [9] 0.3823529 1.609069
##      lhs                                     rhs      support  confidence
## [1] {toothed=FALSE,backbone=TRUE} => {airborne=TRUE} 0.1584158 0.7272727
## [2] {predator=FALSE,toothed=FALSE} => {airborne=TRUE} 0.1485149 0.7142857
## [3] {toothed=FALSE,tail=TRUE}      => {airborne=TRUE} 0.1584158 0.6956522
## [4] {toothed=FALSE,breathes=TRUE}  => {airborne=TRUE} 0.2178218 0.6666667
## [5] {aquatic=FALSE,toothed=FALSE}  => {airborne=TRUE} 0.1683168 0.6296296
## [6] {toothed=FALSE,catsize=FALSE}  => {airborne=TRUE} 0.1881188 0.6129032
## [7] {toothed=FALSE,legs=TRUE}      => {airborne=TRUE} 0.2178218 0.6111111
## [8] {toothed=FALSE,venomous=FALSE} => {airborne=TRUE} 0.1980198 0.5555556
##      lift
## [1] 3.060606
## [2] 3.005952
## [3] 2.927536
## [4] 2.805556
## [5] 2.649691
## [6] 2.579301
## [7] 2.571759
## [8] 2.337963
## [1] "Número de reglas con consecuente negado"
##      lhs                                     rhs      support  confidence
## [1] {hair=TRUE,eggs=FALSE}           => {milk=TRUE} 0.3762376 1.0000000
## [2] {eggs=FALSE,catsize=TRUE}          => {milk=TRUE} 0.3069307 1.0000000
## [3] {eggs=FALSE,predator=FALSE}        => {milk=TRUE} 0.1881188 1.0000000
## [4] {eggs=FALSE,venomous=FALSE}       => {milk=TRUE} 0.3960396 1.0000000
## [5] {hair=TRUE,catsize=TRUE}           => {milk=TRUE} 0.2970297 1.0000000
## [6] {hair=TRUE,predator=TRUE}          => {milk=TRUE} 0.1980198 1.0000000
## [7] {hair=TRUE,toothed=TRUE}           => {milk=TRUE} 0.3762376 1.0000000
## [8] {hair=TRUE,tail=TRUE}             => {milk=TRUE} 0.3267327 1.0000000
## [9] {hair=TRUE,airborne=FALSE}         => {milk=TRUE} 0.3663366 1.0000000
## [10] {hair=TRUE,backbone=TRUE}          => {milk=TRUE} 0.3861386 1.0000000
## [11] {eggs=FALSE,breathes=TRUE}         => {milk=TRUE} 0.3960396 0.9756098
## [12] {eggs=FALSE,backbone=TRUE}        => {milk=TRUE} 0.3960396 0.9756098
## [13] {eggs=FALSE,legs=TRUE}             => {milk=TRUE} 0.3663366 0.9736842
## [14] {hair=TRUE,venomous=FALSE}         => {milk=TRUE} 0.3861386 0.9512195
## [15] {aquatic=FALSE,toothed=TRUE}       => {milk=TRUE} 0.3465347 0.9210526
## [16] {hair=TRUE,domestic=FALSE}         => {milk=TRUE} 0.3069307 0.9117647
## [17] {toothed=TRUE,catsize=TRUE}         => {milk=TRUE} 0.3069307 0.8857143
## [18] {toothed=TRUE,legs=TRUE}           => {milk=TRUE} 0.3663366 0.8809524
## [19] {toothed=TRUE,breathes=TRUE}       => {milk=TRUE} 0.3960396 0.8510638
## [20] {feathers=FALSE,catsize=TRUE}       => {milk=TRUE} 0.3168317 0.8421053
## [21] {aquatic=FALSE,catsize=TRUE}       => {milk=TRUE} 0.2574257 0.8387097
## [22] {breathes=TRUE,catsize=TRUE}       => {milk=TRUE} 0.3168317 0.8205128
## [23] {toothed=TRUE,fins=FALSE}          => {milk=TRUE} 0.3564356 0.8181818
## [24] {predator=FALSE,toothed=TRUE}      => {milk=TRUE} 0.1881188 0.7916667
## [25] {legs=TRUE,catsize=TRUE}            => {milk=TRUE} 0.2871287 0.7837838
## [26] {airborne=FALSE,catsize=TRUE}       => {milk=TRUE} 0.3168317 0.7804878
## [27] {fins=FALSE,catsize=TRUE}          => {milk=TRUE} 0.2772277 0.7777778
## [28] {predator=FALSE,catsize=TRUE}      => {milk=TRUE} 0.1188119 0.7500000

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## [29] {backbone=TRUE, catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [30] {venomous=FALSE, catsize=TRUE}    => {milk=TRUE} 0.3168317 0.7441860
## [31] {airborne=FALSE, aquatic=FALSE}   => {milk=TRUE} 0.3267327 0.7173913
## [32] {toothed=TRUE, venomous=FALSE}    => {milk=TRUE} 0.3960396 0.7017544
## [33] {airborne=FALSE, breathes=TRUE}   => {milk=TRUE} 0.3861386 0.6964286
## [34] {feathers=FALSE, aquatic=FALSE}   => {milk=TRUE} 0.3465347 0.6862745
## [35] {feathers=FALSE, breathes=TRUE}   => {milk=TRUE} 0.4059406 0.6833333
## [36] {airborne=FALSE, legs=TRUE}       => {milk=TRUE} 0.3564356 0.6666667
## [37] {aquatic=FALSE, backbone=TRUE}    => {milk=TRUE} 0.3465347 0.6603774
## [38] {toothed=TRUE}                   => {milk=TRUE} 0.3960396 0.6557377
## [39] {feathers=FALSE, legs=TRUE}       => {milk=TRUE} 0.3762376 0.6551724
## [40] {feathers=FALSE, backbone=TRUE}   => {milk=TRUE} 0.4059406 0.6507937
## [41] {feathers=FALSE, tail=TRUE}       => {milk=TRUE} 0.3465347 0.6363636
## [42] {aquatic=FALSE, tail=TRUE}       => {milk=TRUE} 0.2970297 0.6122449
## [43] {airborne=FALSE, predator=FALSE} => {milk=TRUE} 0.1683168 0.6071429
## [44] {airborne=FALSE, backbone=TRUE}   => {milk=TRUE} 0.3861386 0.6000000
## [45] {backbone=TRUE, breathes=TRUE}    => {milk=TRUE} 0.4059406 0.5942029
## [46] {backbone=TRUE, legs=TRUE}       => {milk=TRUE} 0.3762376 0.5937500
## [47] {aquatic=FALSE, predator=TRUE}    => {milk=TRUE} 0.1584158 0.5925926
## [48] {aquatic=FALSE, legs=TRUE}       => {milk=TRUE} 0.3465347 0.5833333
## [49] {airborne=FALSE, fins=FALSE}     => {milk=TRUE} 0.3465347 0.5833333
## [50] {airborne=FALSE, tail=TRUE}      => {milk=TRUE} 0.3267327 0.5789474
## [51] {legs=TRUE, tail=TRUE}           => {milk=TRUE} 0.3267327 0.5789474
## [52] {feathers=FALSE, fins=FALSE}     => {milk=TRUE} 0.3663366 0.5781250
## [53] {aquatic=FALSE, venomous=FALSE}   => {milk=TRUE} 0.3465347 0.5737705
## [54] {breathes=TRUE, tail=TRUE}       => {milk=TRUE} 0.3465347 0.5737705
## [55] {predator=TRUE, breathes=TRUE}    => {milk=TRUE} 0.2178218 0.5641026
## [56] {feathers=FALSE, venomous=FALSE} => {milk=TRUE} 0.4059406 0.5616438
## [57] {backbone=TRUE, fins=FALSE}     => {milk=TRUE} 0.3663366 0.5606061
## [58] {feathers=FALSE, predator=FALSE} => {milk=TRUE} 0.1881188 0.5588235
## [59] {airborne=FALSE, venomous=FALSE} => {milk=TRUE} 0.3861386 0.5492958
## [60] {aquatic=FALSE, breathes=TRUE}   => {milk=TRUE} 0.3465347 0.5468750
## [61] {breathes=TRUE, venomous=FALSE}   => {milk=TRUE} 0.4059406 0.5466667
## [62] {fins=FALSE, tail=TRUE}         => {milk=TRUE} 0.3168317 0.5423729
## [63] {feathers=FALSE, airborne=FALSE} => {milk=TRUE} 0.3861386 0.5342466
## [64] {predator=FALSE, backbone=TRUE}   => {milk=TRUE} 0.1881188 0.5277778
## [65] {breathes=TRUE, legs=TRUE}       => {milk=TRUE} 0.3762376 0.5205479
## [66] {backbone=TRUE, venomous=FALSE}   => {milk=TRUE} 0.4059406 0.5189873
## [67] {predator=FALSE, tail=TRUE}      => {milk=TRUE} 0.1683168 0.5151515
## [68] {venomous=FALSE, legs=TRUE}      => {milk=TRUE} 0.3762376 0.5135135
## [69] {feathers=FALSE}                 => {milk=TRUE} 0.4059406 0.5061728
## [70] {venomous=FALSE, tail=TRUE}      => {milk=TRUE} 0.3465347 0.4929577
## [71] {venomous=FALSE, fins=FALSE}     => {milk=TRUE} 0.3663366 0.4805195
## [72] {predator=FALSE, venomous=FALSE} => {milk=TRUE} 0.1881188 0.4418605
## [73] {predator=TRUE}                  => {milk=TRUE} 0.2178218 0.3928571
## lift
## [1] 2.463415
## [2] 2.463415
## [3] 2.463415
## [4] 2.463415
## [5] 2.463415
## [6] 2.463415
## [7] 2.463415
## [8] 2.463415

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[9] 2.463415
[10] 2.463415
[11] 2.403331
[12] 2.403331
[13] 2.398588
[14] 2.343248
[15] 2.268935
[16] 2.246055
[17] 2.181882
[18] 2.170151
[19] 2.096523
[20] 2.074454
[21] 2.066090
[22] 2.021263
[23] 2.015521
[24] 1.950203
[25] 1.930784
[26] 1.922665
[27] 1.915989
[28] 1.847561
[29] 1.833239
[30] 1.833239
[31] 1.767232
[32] 1.728712
[33] 1.715592
[34] 1.690579
[35] 1.683333
[36] 1.642276
[37] 1.626783
[38] 1.615354
[39] 1.613961
[40] 1.603175
[41] 1.567627
[42] 1.508213
[43] 1.495645
[44] 1.478049
[45] 1.463768
[46] 1.462652
[47] 1.459801
[48] 1.436992
[49] 1.436992
[50] 1.426187
[51] 1.426187
[52] 1.424162
[53] 1.413435
[54] 1.413435
[55] 1.389619
[56] 1.383562
[57] 1.381005
[58] 1.376614
[59] 1.353143
[60] 1.347180
[61] 1.346667
[62] 1.336089


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## [63] 1.316071
## [64] 1.300136
## [65] 1.282325
## [66] 1.278481
## [67] 1.269032
## [68] 1.264997
## [69] 1.246914
## [70] 1.214359
## [71] 1.183719
## [72] 1.088486
## [73] 0.967770

##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {milk=FALSE} 0.1287129 1.0000000 1.6833333
## [2] {backbone=FALSE}    => {milk=FALSE} 0.1782178 1.0000000 1.6833333
## [3] {type=bird}         => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [4] {feathers=TRUE}      => {milk=FALSE} 0.1980198 1.0000000 1.6833333
## [5] {breathes=FALSE}     => {milk=FALSE} 0.2079208 1.0000000 1.6833333
## [6] {eggs=TRUE}          => {milk=FALSE} 0.5742574 0.9830508 1.6548023
## [7] {hair=FALSE}        => {milk=FALSE} 0.5544554 0.9655172 1.6252874
## [8] {airborne=TRUE}     => {milk=FALSE} 0.2178218 0.9166667 1.5430556
## [9] {legs=FALSE}        => {milk=FALSE} 0.1980198 0.8695652 1.4637681
## [10] {aquatic=TRUE}      => {milk=FALSE} 0.2970297 0.8333333 1.4027778
## [11] {tail=FALSE}       => {milk=FALSE} 0.1980198 0.7692308 1.2948718
## [12] {fins=TRUE}        => {milk=FALSE} 0.1287129 0.7647059 1.2872549
## [13] {predator=TRUE}     => {milk=FALSE} 0.3366337 0.6071429 1.0220238
## [14] {fins=FALSE}        => {milk=FALSE} 0.4653465 0.5595238 0.9418651
## [15] {tail=TRUE}         => {milk=FALSE} 0.3960396 0.5333333 0.8977778
## [16] {backbone=TRUE}     => {milk=FALSE} 0.4158416 0.5060241 0.8518072
## [17] {aquatic=FALSE}     => {milk=FALSE} 0.2970297 0.4615385 0.7769231
## [18] {toothed=TRUE}      => {milk=FALSE} 0.2079208 0.3442623 0.5795082

##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {milk=TRUE} 0.1980198 1.0000000
## [2] {aquatic=FALSE,predator=TRUE} => {milk=TRUE} 0.1584158 0.5925926
## [3] {predator=TRUE,breathes=TRUE} => {milk=TRUE} 0.2178218 0.5641026
##      lift
## [1] 2.463415
## [2] 1.459801
## [3] 1.389619

##      lhs                rhs      support  confidence
## [1] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [2] {fins=FALSE,catsize=TRUE}  => {milk=TRUE} 0.2772277 0.7777778
## [3] {airborne=FALSE,fins=FALSE} => {milk=TRUE} 0.3465347 0.5833333
## [4] {feathers=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.5781250
## [5] {backbone=TRUE,fins=FALSE}  => {milk=TRUE} 0.3663366 0.5606061
## [6] {fins=FALSE,tail=TRUE}      => {milk=TRUE} 0.3168317 0.5423729
## [7] {venomous=FALSE,fins=FALSE} => {milk=TRUE} 0.3663366 0.4805195
##      lift
## [1] 2.015521
## [2] 1.915989
## [3] 1.436992
## [4] 1.424162
## [5] 1.381005
## [6] 1.336089
## [7] 1.183719

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##	lhs	rhs	support	confidence
## [1]	{hair=TRUE,tail=TRUE}	=> {milk=TRUE}	0.3267327	1.0000000
## [2]	{feathers=FALSE,tail=TRUE}	=> {milk=TRUE}	0.3465347	0.6363636
## [3]	{aquatic=FALSE,tail=TRUE}	=> {milk=TRUE}	0.2970297	0.6122449
## [4]	{airborne=FALSE,tail=TRUE}	=> {milk=TRUE}	0.3267327	0.5789474
## [5]	{legs=TRUE,tail=TRUE}	=> {milk=TRUE}	0.3267327	0.5789474
## [6]	{breathes=TRUE,tail=TRUE}	=> {milk=TRUE}	0.3465347	0.5737705
## [7]	{fins=FALSE,tail=TRUE}	=> {milk=TRUE}	0.3168317	0.5423729
## [8]	{predator=FALSE,tail=TRUE}	=> {milk=TRUE}	0.1683168	0.5151515
## [9]	{venomous=FALSE,tail=TRUE}	=> {milk=TRUE}	0.3465347	0.4929577
##	lift			
## [1]	2.463415			
## [2]	1.567627			
## [3]	1.508213			
## [4]	1.426187			
## [5]	1.426187			
## [6]	1.413435			
## [7]	1.336089			
## [8]	1.269032			
## [9]	1.214359			
##	lhs	rhs	support	confidence
## [1]	{hair=TRUE,backbone=TRUE}	=> {milk=TRUE}	0.3861386	1.0000000
## [2]	{eggs=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.3960396	0.9756098
## [3]	{backbone=TRUE,catsize=TRUE}	=> {milk=TRUE}	0.3168317	0.7441860
## [4]	{aquatic=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.3465347	0.6603774
## [5]	{feathers=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.4059406	0.6507937
## [6]	{airborne=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.3861386	0.6000000
## [7]	{backbone=TRUE,breathes=TRUE}	=> {milk=TRUE}	0.4059406	0.5942029
## [8]	{backbone=TRUE,legs=TRUE}	=> {milk=TRUE}	0.3762376	0.5937500
## [9]	{backbone=TRUE,fins=FALSE}	=> {milk=TRUE}	0.3663366	0.5606061
## [10]	{predator=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.1881188	0.5277778
## [11]	{backbone=TRUE,venomous=FALSE}	=> {milk=TRUE}	0.4059406	0.5189873
##	lift			
## [1]	2.463415			
## [2]	2.403331			
## [3]	1.833239			
## [4]	1.626783			
## [5]	1.603175			
## [6]	1.478049			
## [7]	1.463768			
## [8]	1.462652			
## [9]	1.381005			
## [10]	1.300136			
## [11]	1.278481			
##	lhs	rhs	support	confidence
## [1]	{aquatic=FALSE,toothed=TRUE}	=> {milk=TRUE}	0.3465347	0.9210526
## [2]	{aquatic=FALSE,catsize=TRUE}	=> {milk=TRUE}	0.2574257	0.8387097
## [3]	{airborne=FALSE,aquatic=FALSE}	=> {milk=TRUE}	0.3267327	0.7173913
## [4]	{feathers=FALSE,aquatic=FALSE}	=> {milk=TRUE}	0.3465347	0.6862745
## [5]	{aquatic=FALSE,backbone=TRUE}	=> {milk=TRUE}	0.3465347	0.6603774
## [6]	{aquatic=FALSE,tail=TRUE}	=> {milk=TRUE}	0.2970297	0.6122449
## [7]	{aquatic=FALSE,predator=TRUE}	=> {milk=TRUE}	0.1584158	0.5925926
## [8]	{aquatic=FALSE,legs=TRUE}	=> {milk=TRUE}	0.3465347	0.5833333
## [9]	{aquatic=FALSE,venomous=FALSE}	=> {milk=TRUE}	0.3465347	0.5737705

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## [10] {aquatic=FALSE,breathes=TRUE} => {milk=TRUE} 0.3465347 0.5468750
## lift
## [1] 2.268935
## [2] 2.066090
## [3] 1.767232
## [4] 1.690579
## [5] 1.626783
## [6] 1.508213
## [7] 1.459801
## [8] 1.436992
## [9] 1.413435
## [10] 1.347180
## lhs rhs support confidence
## [1] {hair=TRUE,toothed=TRUE} => {milk=TRUE} 0.3762376 1.0000000
## [2] {aquatic=FALSE,toothed=TRUE} => {milk=TRUE} 0.3465347 0.9210526
## [3] {toothed=TRUE,catsize=TRUE} => {milk=TRUE} 0.3069307 0.8857143
## [4] {toothed=TRUE,legs=TRUE} => {milk=TRUE} 0.3663366 0.8809524
## [5] {toothed=TRUE,breathes=TRUE} => {milk=TRUE} 0.3960396 0.8510638
## [6] {toothed=TRUE,fins=FALSE} => {milk=TRUE} 0.3564356 0.8181818
## [7] {predator=FALSE,toothed=TRUE} => {milk=TRUE} 0.1881188 0.7916667
## [8] {toothed=TRUE,venomous=FALSE} => {milk=TRUE} 0.3960396 0.7017544
## lift
## [1] 2.463415
## [2] 2.268935
## [3] 2.181882
## [4] 2.170151
## [5] 2.096523
## [6] 2.015521
## [7] 1.950203
## [8] 1.728712
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {type=bird} => {toothed=FALSE} 0.1980198
## [2] {feathers=TRUE} => {toothed=FALSE} 0.1980198
## [3] {hair=FALSE,airborne=TRUE} => {toothed=FALSE} 0.1782178
## [4] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [5] {milk=FALSE,airborne=TRUE} => {toothed=FALSE} 0.2178218
## [6] {milk=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2673267
## [7] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257
## [8] {hair=FALSE,aquatic=FALSE} => {toothed=FALSE} 0.2277228
## [9] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [10] {milk=FALSE,legs=TRUE} => {toothed=FALSE} 0.3465347
## [11] {hair=FALSE,legs=TRUE} => {toothed=FALSE} 0.3069307
## [12] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [13] {milk=FALSE,tail=FALSE} => {toothed=FALSE} 0.1683168
## [14] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [15] {milk=FALSE,fins=FALSE} => {toothed=FALSE} 0.3861386
## [16] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [17] {milk=FALSE,breathes=TRUE} => {toothed=FALSE} 0.3168317
## [18] {hair=FALSE,fins=FALSE} => {toothed=FALSE} 0.3465347
## [19] {hair=FALSE,tail=FALSE} => {toothed=FALSE} 0.1287129
## [20] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [21] {milk=FALSE,predator=FALSE} => {toothed=FALSE} 0.2079208
## [22] {tail=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1584158

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## [23] {hair=FALSE,predator=FALSE}    => {toothed=FALSE} 0.1683168
## [24] {hair=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.2772277
## [25] {tail=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.1584158
## [26] {aquatic=FALSE,tail=FALSE}     => {toothed=FALSE} 0.1089109
## [27] {aquatic=TRUE,fins=FALSE}      => {toothed=FALSE} 0.1287129
## [28] {fins=FALSE,tail=FALSE}        => {toothed=FALSE} 0.1683168
## [29] {eggs=TRUE,venomous=FALSE}     => {toothed=FALSE} 0.3564356
## [30] {milk=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3465347
## [31] {aquatic=TRUE,legs=TRUE}       => {toothed=FALSE} 0.1188119
## [32] {legs=TRUE,catsize=FALSE}      => {toothed=FALSE} 0.2673267
## [33] {tail=FALSE}                  => {toothed=FALSE} 0.1683168
## [34] {milk=FALSE}                  => {toothed=FALSE} 0.3861386
## [35] {aquatic=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.2178218
## [36] {fins=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.3069307
## [37] {hair=FALSE,venomous=FALSE}    => {toothed=FALSE} 0.3267327
## [38] {hair=FALSE,catsize=FALSE}     => {toothed=FALSE} 0.2673267
## [39] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248
## [40] {predator=FALSE,catsize=FALSE} => {toothed=FALSE} 0.1683168
## [41] {catsize=FALSE}               => {toothed=FALSE} 0.3069307
## [42] {predator=FALSE,fins=FALSE}    => {toothed=FALSE} 0.2079208
## [43] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [44] {fins=FALSE,domestic=FALSE}    => {toothed=FALSE} 0.3564356
## [45] {predator=FALSE,legs=TRUE}     => {toothed=FALSE} 0.1881188
## [46] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [47] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [48] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
## [49] {predator=TRUE}               => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 1.0000000 2.5250000
## [2] 1.0000000 2.5250000
## [3] 1.0000000 2.5250000
## [4] 1.0000000 2.5250000
## [5] 1.0000000 2.5250000
## [6] 0.9000000 2.2725000
## [7] 0.8965517 2.2637931
## [8] 0.8846154 2.2336538
## [9] 0.8750000 2.2093750
## [10] 0.8750000 2.2093750
## [11] 0.8611111 2.1743056
## [12] 0.8500000 2.1462500
## [13] 0.8500000 2.1462500
## [14] 0.8478261 2.1407609
## [15] 0.8297872 2.0952128
## [16] 0.8205128 2.0717949
## [17] 0.8205128 2.0717949
## [18] 0.8139535 2.0552326
## [19] 0.8125000 2.0515625
## [20] 0.8076923 2.0394231
## [21] 0.8076923 2.0394231
## [22] 0.8000000 2.0200000
## [23] 0.7727273 1.9511364
## [24] 0.7567568 1.9108108
## [25] 0.6956522 1.7565217
## [26] 0.6875000 1.7359375

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## [27] 0.6842105 1.7276316
## [28] 0.6800000 1.7170000
## [29] 0.6792453 1.7150943
## [30] 0.6730769 1.6995192
## [31] 0.6666667 1.6833333
## [32] 0.6585366 1.6628049
## [33] 0.6538462 1.6509615
## [34] 0.6500000 1.6412500
## [35] 0.6470588 1.6338235
## [36] 0.6458333 1.6307292
## [37] 0.6346154 1.6024038
## [38] 0.6136364 1.5494318
## [39] 0.6097561 1.5396341
## [40] 0.5862069 1.4801724
## [41] 0.5438596 1.3732456
## [42] 0.5121951 1.2932927
## [43] 0.5000000 1.2625000
## [44] 0.5000000 1.2625000
## [45] 0.4871795 1.2301282
## [46] 0.4848485 1.2242424
## [47] 0.4339623 1.0957547
## [48] 0.4264706 1.0768382
## [49] 0.3392857 0.8566964
##      lhs                      rhs      support  confidence lift
## [1] {type=fish}      => {toothed=TRUE} 0.1287129 1.0000000 1.6557377
## [2] {fins=TRUE}       => {toothed=TRUE} 0.1683168 1.0000000 1.6557377
## [3] {eggs=FALSE}      => {toothed=TRUE} 0.4059406 0.9761905 1.6163154
## [4] {legs=FALSE}      => {toothed=TRUE} 0.1881188 0.8260870 1.3677833
## [5] {catsize=TRUE}     => {toothed=TRUE} 0.3465347 0.7954545 1.3170641
## [6] {feathers=FALSE}   => {toothed=TRUE} 0.6039604 0.7530864 1.2469136
## [7] {tail=TRUE}        => {toothed=TRUE} 0.5148515 0.6933333 1.1479781
## [8] {breathes=FALSE}   => {toothed=TRUE} 0.1386139 0.6666667 1.1038251
## [9] {predator=TRUE}    => {toothed=TRUE} 0.3663366 0.6607143 1.0939696
## [10] {aquatic=TRUE}     => {toothed=TRUE} 0.2277228 0.6388889 1.0578324
## [11] {domestic=FALSE}   => {toothed=TRUE} 0.5148515 0.5909091 0.9783905
## [12] {breathes=TRUE}    => {toothed=TRUE} 0.4653465 0.5875000 0.9727459
## [13] {predator=FALSE}   => {toothed=TRUE} 0.2376238 0.5333333 0.8830601
## [14] {catsize=FALSE}    => {toothed=TRUE} 0.2574257 0.4561404 0.7552488
## [15] {hair=FALSE}       => {toothed=TRUE} 0.2277228 0.3965517 0.6565856
## [16] {eggs=TRUE}        => {toothed=TRUE} 0.1980198 0.3389831 0.5612670
##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {toothed=FALSE} 0.1287129 0.6842105
## [2] {aquatic=TRUE,legs=TRUE}   => {toothed=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.727632
## [2] 1.683333
##      lhs                      rhs      support
## [1] {tail=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1584158
## [2] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [3] {fins=FALSE,domestic=FALSE}   => {toothed=FALSE} 0.3564356
## [4] {legs=TRUE,domestic=FALSE}     => {toothed=FALSE} 0.3168317
## [5] {aquatic=FALSE,domestic=FALSE} => {toothed=FALSE} 0.2277228
## [6] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287
##      confidence lift

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## [1] 0.6956522 1.756522
## [2] 0.5000000 1.262500
## [3] 0.5000000 1.262500
## [4] 0.4848485 1.224242
## [5] 0.4339623 1.095755
## [6] 0.4264706 1.076838
##      lhs                                     rhs      support  confidence
## [1] {eggs=TRUE,breathes=TRUE}      => {toothed=FALSE} 0.3168317 0.8205128
## [2] {milk=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.3168317 0.8205128
## [3] {hair=FALSE,breathes=TRUE}     => {toothed=FALSE} 0.2772277 0.7567568
## [4] {breathes=TRUE,catsize=FALSE}  => {toothed=FALSE} 0.2475248 0.6097561
## [5] {breathes=TRUE,domestic=FALSE} => {toothed=FALSE} 0.2871287 0.4264706
##      lift
## [1] 2.071795
## [2] 2.071795
## [3] 1.910811
## [4] 1.539634
## [5] 1.076838
##      lhs                                     rhs      support
## [1] {eggs=TRUE,predator=FALSE}      => {toothed=FALSE} 0.2079208
## [2] {milk=FALSE,predator=FALSE}     => {toothed=FALSE} 0.2079208
## [3] {hair=FALSE,predator=FALSE}     => {toothed=FALSE} 0.1683168
## [4] {predator=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.1683168
## [5] {predator=FALSE,fins=FALSE}      => {toothed=FALSE} 0.2079208
## [6] {predator=FALSE,domestic=FALSE} => {toothed=FALSE} 0.1683168
## [7] {predator=FALSE,legs=TRUE}      => {toothed=FALSE} 0.1881188
##      confidence lift
## [1] 0.8076923 2.039423
## [2] 0.8076923 2.039423
## [3] 0.7727273 1.951136
## [4] 0.5862069 1.480172
## [5] 0.5121951 1.293293
## [6] 0.5000000 1.262500
## [7] 0.4871795 1.230128
##      lhs                                     rhs      support  confidence
## [1] {tail=FALSE,catsize=FALSE}      => {toothed=FALSE} 0.1584158 0.8000000
## [2] {legs=TRUE,catsize=FALSE}        => {toothed=FALSE} 0.2673267 0.6585366
## [3] {aquatic=FALSE,catsize=FALSE}    => {toothed=FALSE} 0.2178218 0.6470588
## [4] {fins=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.3069307 0.6458333
## [5] {hair=FALSE,catsize=FALSE}       => {toothed=FALSE} 0.2673267 0.6136364
## [6] {breathes=TRUE,catsize=FALSE}    => {toothed=FALSE} 0.2475248 0.6097561
## [7] {predator=FALSE,catsize=FALSE}  => {toothed=FALSE} 0.1683168 0.5862069
##      lift
## [1] 2.020000
## [2] 1.662805
## [3] 1.633824
## [4] 1.630729
## [5] 1.549432
## [6] 1.539634
## [7] 1.480172
##      lhs                                     rhs      support  confidence
## [1] {hair=FALSE,airborne=TRUE}      => {toothed=FALSE} 0.1782178 1.0000000
## [2] {hair=FALSE,aquatic=FALSE}        => {toothed=FALSE} 0.2277228 0.8846154
## [3] {hair=FALSE,legs=TRUE}           => {toothed=FALSE} 0.3069307 0.8611111

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## [4] {hair=FALSE,fins=FALSE}      => {toothed=FALSE} 0.3465347 0.8139535
## [5] {hair=FALSE,tail=FALSE}      => {toothed=FALSE} 0.1287129 0.8125000
## [6] {hair=FALSE,predator=FALSE} => {toothed=FALSE} 0.1683168 0.7727273
## [7] {hair=FALSE,breathes=TRUE} => {toothed=FALSE} 0.2772277 0.7567568
## [8] {hair=FALSE,venomous=FALSE} => {toothed=FALSE} 0.3267327 0.6346154
## [9] {hair=FALSE,catsize=FALSE} => {toothed=FALSE} 0.2673267 0.6136364
## lift
## [1] 2.525000
## [2] 2.233654
## [3] 2.174306
## [4] 2.055233
## [5] 2.051563
## [6] 1.951136
## [7] 1.910811
## [8] 1.602404
## [9] 1.549432
## lhs rhs support confidence
## [1] {eggs=TRUE,airborne=TRUE} => {toothed=FALSE} 0.2178218 1.0000000
## [2] {eggs=TRUE,aquatic=FALSE} => {toothed=FALSE} 0.2574257 0.8965517
## [3] {eggs=TRUE,legs=TRUE} => {toothed=FALSE} 0.3465347 0.8750000
## [4] {eggs=TRUE,tail=FALSE} => {toothed=FALSE} 0.1683168 0.8500000
## [5] {eggs=TRUE,fins=FALSE} => {toothed=FALSE} 0.3861386 0.8478261
## [6] {eggs=TRUE,breathes=TRUE} => {toothed=FALSE} 0.3168317 0.8205128
## [7] {eggs=TRUE,predator=FALSE} => {toothed=FALSE} 0.2079208 0.8076923
## [8] {eggs=TRUE,venomous=FALSE} => {toothed=FALSE} 0.3564356 0.6792453
## lift
## [1] 2.525000
## [2] 2.263793
## [3] 2.209375
## [4] 2.146250
## [5] 2.140761
## [6] 2.071795
## [7] 2.039423
## [8] 1.715094
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [2] {fins=FALSE,domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [3] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109
## [4] {milk=TRUE,predator=FALSE} => {aquatic=FALSE} 0.1881188
## [5] {predator=FALSE,type=mammal} => {aquatic=FALSE} 0.1881188
## [6] {eggs=FALSE,predator=FALSE} => {aquatic=FALSE} 0.1881188
## [7] {hair=TRUE,predator=FALSE} => {aquatic=FALSE} 0.2277228
## [8] {hair=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.1287129
## [9] {hair=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3861386
## [10] {eggs=FALSE,legs=TRUE} => {aquatic=FALSE} 0.3564356
## [11] {eggs=FALSE,fins=FALSE} => {aquatic=FALSE} 0.3564356
## [12] {milk=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3465347
## [13] {fins=FALSE,type=mammal} => {aquatic=FALSE} 0.3465347
## [14] {predator=FALSE,catsize=TRUE} => {aquatic=FALSE} 0.1485149
## [15] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376
## [16] {predator=FALSE,fins=FALSE} => {aquatic=FALSE} 0.3762376
## [17] {domestic=TRUE} => {aquatic=FALSE} 0.1188119
## [18] {predator=FALSE,legs=TRUE} => {aquatic=FALSE} 0.3564356

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## [19] {hair=TRUE} => {aquatic=FALSE} 0.3861386
## [20] {eggs=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3564356
## [21] {toothed=TRUE,fins=FALSE} => {aquatic=FALSE} 0.3762376
## [22] {fins=FALSE,catsize=TRUE} => {aquatic=FALSE} 0.3069307
## [23] {eggs=FALSE} => {aquatic=FALSE} 0.3564356
## [24] {toothed=TRUE,legs=TRUE} => {aquatic=FALSE} 0.3564356
## [25] {milk=TRUE} => {aquatic=FALSE} 0.3465347
## [26] {type=mammal} => {aquatic=FALSE} 0.3465347
## [27] {feathers=FALSE,predator=FALSE} => {aquatic=FALSE} 0.2871287
## [28] {predator=FALSE} => {aquatic=FALSE} 0.3762376
## [29] {breathes=TRUE,fins=FALSE} => {aquatic=FALSE} 0.6336634
## [30] {legs=TRUE,catsize=TRUE} => {aquatic=FALSE} 0.3069307
## [31] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495
## [32] {fins=FALSE,tail=TRUE} => {aquatic=FALSE} 0.4851485
## [33] {legs=TRUE,tail=TRUE} => {aquatic=FALSE} 0.4653465
## [34] {breathes=TRUE,legs=TRUE} => {aquatic=FALSE} 0.5940594
## [35] {breathes=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.3267327
## [36] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446
## [37] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525
## [38] {feathers=FALSE,fins=FALSE} => {aquatic=FALSE} 0.5049505
## [39] {feathers=FALSE,legs=TRUE} => {aquatic=FALSE} 0.4554455
## [40] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604
## [41] {fins=FALSE,legs=TRUE} => {aquatic=FALSE} 0.5940594
## [42] {fins=FALSE} => {aquatic=FALSE} 0.6435644
## [43] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158
## [44] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149
## [45] {toothed=FALSE} => {aquatic=FALSE} 0.2673267
## [46] {toothed=TRUE} => {aquatic=FALSE} 0.3762376
## [47] {tail=FALSE} => {aquatic=FALSE} 0.1584158
## [48] {domestic=FALSE} => {aquatic=FALSE} 0.5247525
## [49] {catsize=FALSE} => {aquatic=FALSE} 0.3366337
## [50] {eggs=TRUE} => {aquatic=FALSE} 0.2871287
## confidence lift
## [1] 1.0000000 1.5538462
## [2] 1.0000000 1.5538462
## [3] 1.0000000 1.5538462
## [4] 1.0000000 1.5538462
## [5] 1.0000000 1.5538462
## [6] 1.0000000 1.5538462
## [7] 1.0000000 1.5538462
## [8] 1.0000000 1.5538462
## [9] 0.9512195 1.4780488
## [10] 0.9473684 1.4720648
## [11] 0.9473684 1.4720648
## [12] 0.9459459 1.4698545
## [13] 0.9459459 1.4698545
## [14] 0.9375000 1.4567308
## [15] 0.9268293 1.4401501
## [16] 0.9268293 1.4401501
## [17] 0.9230769 1.4343195
## [18] 0.9230769 1.4343195
## [19] 0.9069767 1.4093023
## [20] 0.8780488 1.3643527
## [21] 0.8636364 1.3419580

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## [22] 0.8611111 1.3380342
## [23] 0.8571429 1.3318681
## [24] 0.8571429 1.3318681
## [25] 0.8536585 1.3264540
## [26] 0.8536585 1.3264540
## [27] 0.8529412 1.3253394
## [28] 0.8444444 1.3121368
## [29] 0.8421053 1.3085020
## [30] 0.8378378 1.3018711
## [31] 0.8333333 1.2948718
## [32] 0.8305085 1.2904824
## [33] 0.8245614 1.2812416
## [34] 0.8219178 1.2771338
## [35] 0.8048780 1.2506567
## [36] 0.8035714 1.2486264
## [37] 0.8030303 1.2477855
## [38] 0.7968750 1.2382212
## [39] 0.7931034 1.2323607
## [40] 0.7922078 1.2309690
## [41] 0.7792208 1.2107892
## [42] 0.7738095 1.2023810
## [43] 0.6956522 1.0809365
## [44] 0.6818182 1.0594406
## [45] 0.6750000 1.0488462
## [46] 0.6229508 0.9679697
## [47] 0.6153846 0.9562130
## [48] 0.6022727 0.9358392
## [49] 0.5964912 0.9268556
## [50] 0.4915254 0.7637549

##      lhs      rhs      support  confidence lift
## [1] {type=fish}    => {aquatic=TRUE} 0.1287129 1.0000000 2.8055556
## [2] {fins=TRUE}     => {aquatic=TRUE} 0.1683168 1.0000000 2.8055556
## [3] {breathes=FALSE}=> {aquatic=TRUE} 0.1980198 0.9523810 2.6719577
## [4] {legs=FALSE}    => {aquatic=TRUE} 0.1782178 0.7826087 2.1956522
## [5] {backbone=TRUE}  => {aquatic=TRUE} 0.2970297 0.3614458 1.0140562
## [6] {tail=TRUE}      => {aquatic=TRUE} 0.2574257 0.3466667 0.9725926
## [7] {venomous=FALSE}=> {aquatic=TRUE} 0.3168317 0.3440860 0.9653524
## [8] {toothed=FALSE}  => {aquatic=TRUE} 0.1287129 0.3250000 0.9118056
## [9] {breathes=TRUE} => {aquatic=TRUE} 0.1584158 0.2000000 0.5611111

##      lhs      rhs      support  confidence
## [1] {backbone=TRUE,fins=FALSE} => {aquatic=FALSE} 0.5247525 0.8030303
## [2] {toothed=FALSE,backbone=TRUE}=> {aquatic=FALSE} 0.1485149 0.6818182
##      lift
## [1] 1.247786
## [2] 1.059441

##      lhs      rhs      support  confidence
## [1] {fins=FALSE,tail=TRUE}    => {aquatic=FALSE} 0.4851485 0.8305085
## [2] {legs=TRUE,tail=TRUE}      => {aquatic=FALSE} 0.4653465 0.8245614
## [3] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
##      lift
## [1] 1.290482
## [2] 1.281242
## [3] 1.080936

##      lhs      rhs      support  confidence

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## [1] {venomous=FALSE,fins=FALSE} => {aquatic=FALSE} 0.6039604 0.7922078
## lift
## [1] 1.230969
## lhs rhs support confidence
## [1] {toothed=FALSE,tail=TRUE} => {aquatic=FALSE} 0.1584158 0.6956522
## [2] {toothed=FALSE,backbone=TRUE} => {aquatic=FALSE} 0.1485149 0.6818182
## lift
## [1] 1.080936
## [2] 1.059441
## lhs rhs support confidence
## [1] {breathes=TRUE,domestic=TRUE} => {aquatic=FALSE} 0.1188119 1.0000000
## [2] {backbone=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.1089109 1.0000000
## [3] {predator=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3762376 0.9268293
## [4] {eggs=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.3564356 0.8780488
## [5] {breathes=TRUE,fins=FALSE} => {aquatic=FALSE} 0.6336634 0.8421053
## [6] {feathers=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4950495 0.8333333
## [7] {breathes=TRUE,legs=TRUE} => {aquatic=FALSE} 0.5940594 0.8219178
## [8] {breathes=TRUE,catsize=FALSE} => {aquatic=FALSE} 0.3267327 0.8048780
## [9] {airborne=FALSE,breathes=TRUE} => {aquatic=FALSE} 0.4455446 0.8035714
## lift
## [1] 1.553846
## [2] 1.553846
## [3] 1.440150
## [4] 1.364353
## [5] 1.308502
## [6] 1.294872
## [7] 1.277134
## [8] 1.250657
## [9] 1.248626
## [1] "Número de reglas con consecuente negado"
## lhs rhs support
## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE} => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE} => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE} => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158

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## [24] {eggs=TRUE,breathes=TRUE}      => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE}     => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE}                     => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE}          => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE}                   => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE}               => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE}       => {catsize=FALSE} 0.1386139
## [32] {type=bird}                    => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE}                 => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE}                   => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE}        => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE}                 => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE}    => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE}                => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE}               => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE}                    => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE}                   => {catsize=FALSE} 0.1089109
##      confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252
## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468

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## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769
##      lhs                rhs                support  confidence lift
## [1] {milk=TRUE}          => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}         => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}          => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}           => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE}        => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}         => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}          => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}          => {catsize=TRUE} 0.1188119 0.2000000 0.4590909
##      lhs                rhs                support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}  => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174
##      lhs                rhs                support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}  => {catsize=FALSE} 0.1188119 0.6666667
##      lift
## [1] 1.305633
## [2] 1.181287
##      lhs                rhs                support  confidence
## [1] {hair=FALSE,tail=FALSE}   => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}    => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}     => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                rhs                support  confidence
## [1] {milk=FALSE,tail=FALSE}   => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}     => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE}  => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}  => {catsize=FALSE} 0.1683168 0.8095238
##      lift

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## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}    => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}    => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                     => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                   => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}     => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}        => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}            => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}      => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                    => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                     => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}     => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}         => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}     => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}        => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}    => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}    => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE}  => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}        => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}            => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}        => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}        => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.2673267

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## [46] {predator=TRUE,legs=TRUE}      => {catsize=TRUE} 0.2079208
## [47] {feathers=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE} => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}     => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}         => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}     => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE} => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE} => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                  => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                  => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308

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## [37] 0.5633803 1.2932138
## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}       => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}      => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE}  => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}       => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}    => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}       => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}     => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}    => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}     => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}    => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149

```

```

##      lift
## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986
##      lhs                                rhs                support  confidence
## [1] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE}  => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}    => {catsize=TRUE} 0.3267327 0.5500000
##      lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500
##      lhs                                rhs                support  confidence
## [1] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}      => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}          => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}      => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}      => {catsize=TRUE} 0.2376238 0.7058824
##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321
##      lhs                                rhs                support  confidence
## [1] {eggs=FALSE,predator=TRUE}      => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}      => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}      => {catsize=TRUE} 0.3069307 0.7560976
##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"

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##	lhs	rhs	support	confidence
## [1]	{milk=TRUE,toothed=TRUE}	=> {eggs=FALSE}	0.3960396	1.0000000
## [2]	{milk=TRUE,aquatic=FALSE}	=> {eggs=FALSE}	0.3465347	1.0000000
## [3]	{toothed=TRUE,type=mammal}	=> {eggs=FALSE}	0.3960396	1.0000000
## [4]	{aquatic=FALSE,type=mammal}	=> {eggs=FALSE}	0.3465347	1.0000000
## [5]	{hair=TRUE,toothed=TRUE}	=> {eggs=FALSE}	0.3762376	1.0000000
## [6]	{milk=TRUE}	=> {eggs=FALSE}	0.3960396	0.9756098
## [7]	{type=mammal}	=> {eggs=FALSE}	0.3960396	0.9756098
## [8]	{hair=TRUE,backbone=TRUE}	=> {eggs=FALSE}	0.3762376	0.9743590
## [9]	{hair=TRUE,airborne=FALSE}	=> {eggs=FALSE}	0.3564356	0.9729730
## [10]	{hair=TRUE,tail=TRUE}	=> {eggs=FALSE}	0.3168317	0.9696970
## [11]	{hair=TRUE,catsize=TRUE}	=> {eggs=FALSE}	0.2871287	0.9666667
## [12]	{hair=TRUE,predator=TRUE}	=> {eggs=FALSE}	0.1881188	0.9500000
## [13]	{aquatic=FALSE,toothed=TRUE}	=> {eggs=FALSE}	0.3465347	0.9210526
## [14]	{toothed=TRUE,catsize=TRUE}	=> {eggs=FALSE}	0.3069307	0.8857143
## [15]	{toothed=TRUE,legs=TRUE}	=> {eggs=FALSE}	0.3663366	0.8809524
## [16]	{toothed=TRUE,breathes=TRUE}	=> {eggs=FALSE}	0.3960396	0.8510638
## [17]	{toothed=TRUE,fins=FALSE}	=> {eggs=FALSE}	0.3663366	0.8409091
## [18]	{aquatic=FALSE,catsize=TRUE}	=> {eggs=FALSE}	0.2574257	0.8387097
## [19]	{feathers=FALSE,catsize=TRUE}	=> {eggs=FALSE}	0.3069307	0.8157895
## [20]	{breathes=TRUE,catsize=TRUE}	=> {eggs=FALSE}	0.3069307	0.7948718
## [21]	{predator=FALSE,toothed=TRUE}	=> {eggs=FALSE}	0.1881188	0.7916667
## [22]	{legs=TRUE,catsize=TRUE}	=> {eggs=FALSE}	0.2772277	0.7567568
## [23]	{airborne=FALSE,catsize=TRUE}	=> {eggs=FALSE}	0.3069307	0.7560976
## [24]	{predator=FALSE,catsize=TRUE}	=> {eggs=FALSE}	0.1188119	0.7500000
## [25]	{fins=FALSE,catsize=TRUE}	=> {eggs=FALSE}	0.2673267	0.7500000
## [26]	{airborne=FALSE,aquatic=FALSE}	=> {eggs=FALSE}	0.3366337	0.7391304
## [27]	{feathers=FALSE,aquatic=FALSE}	=> {eggs=FALSE}	0.3564356	0.7058824
## [28]	{toothed=TRUE,venomous=FALSE}	=> {eggs=FALSE}	0.3960396	0.7017544
## [29]	{airborne=FALSE,breathes=TRUE}	=> {eggs=FALSE}	0.3861386	0.6964286
## [30]	{feathers=FALSE,breathes=TRUE}	=> {eggs=FALSE}	0.4059406	0.6833333
## [31]	{toothed=TRUE,tail=TRUE}	=> {eggs=FALSE}	0.3465347	0.6730769
## [32]	{airborne=FALSE,legs=TRUE}	=> {eggs=FALSE}	0.3564356	0.6666667
## [33]	{aquatic=FALSE,backbone=TRUE}	=> {eggs=FALSE}	0.3465347	0.6603774
## [34]	{feathers=FALSE,legs=TRUE}	=> {eggs=FALSE}	0.3762376	0.6551724
## [35]	{feathers=FALSE,tail=TRUE}	=> {eggs=FALSE}	0.3564356	0.6545455
## [36]	{feathers=FALSE,backbone=TRUE}	=> {eggs=FALSE}	0.4059406	0.6507937
## [37]	{aquatic=FALSE,tail=TRUE}	=> {eggs=FALSE}	0.3069307	0.6326531
## [38]	{aquatic=FALSE,predator=TRUE}	=> {eggs=FALSE}	0.1683168	0.6296296
## [39]	{airborne=FALSE,predator=FALSE}	=> {eggs=FALSE}	0.1683168	0.6071429
## [40]	{airborne=FALSE,backbone=TRUE}	=> {eggs=FALSE}	0.3861386	0.6000000
## [41]	{airborne=FALSE,fins=FALSE}	=> {eggs=FALSE}	0.3564356	0.6000000
## [42]	{airborne=FALSE,tail=TRUE}	=> {eggs=FALSE}	0.3366337	0.5964912
## [43]	{feathers=FALSE,fins=FALSE}	=> {eggs=FALSE}	0.3762376	0.5937500
## [44]	{backbone=TRUE,breathes=TRUE}	=> {eggs=FALSE}	0.3960396	0.5797101
## [45]	{legs=TRUE,tail=TRUE}	=> {eggs=FALSE}	0.3267327	0.5789474
## [46]	{backbone=TRUE,legs=TRUE}	=> {eggs=FALSE}	0.3663366	0.5781250
## [47]	{aquatic=FALSE,venomous=FALSE}	=> {eggs=FALSE}	0.3465347	0.5737705
## [48]	{breathes=TRUE,tail=TRUE}	=> {eggs=FALSE}	0.3465347	0.5737705
## [49]	{predator=TRUE,breathes=TRUE}	=> {eggs=FALSE}	0.2178218	0.5641026
## [50]	{backbone=TRUE,fins=FALSE}	=> {eggs=FALSE}	0.3663366	0.5606061
## [51]	{fins=FALSE,tail=TRUE}	=> {eggs=FALSE}	0.3267327	0.5593220
## [52]	{feathers=FALSE,predator=FALSE}	=> {eggs=FALSE}	0.1881188	0.5588235
## [53]	{feathers=FALSE,airborne=FALSE}	=> {eggs=FALSE}	0.3960396	0.5479452

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## [54] {feathers=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5479452
## [55] {airborne=FALSE,venomous=FALSE} => {eggs=FALSE} 0.3762376 0.5352113
## [56] {breathes=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5333333
## [57] {predator=FALSE,backbone=TRUE} => {eggs=FALSE} 0.1881188 0.5277778
## [58] {predator=FALSE,tail=TRUE} => {eggs=FALSE} 0.1683168 0.5151515
## [59] {backbone=TRUE,venomous=FALSE} => {eggs=FALSE} 0.3960396 0.5063291
## [60] {venomous=FALSE,legs=TRUE} => {eggs=FALSE} 0.3663366 0.5000000
## [61] {backbone=TRUE} => {eggs=FALSE} 0.4059406 0.4939759
## [62] {venomous=FALSE,fins=FALSE} => {eggs=FALSE} 0.3564356 0.4675325
## lift
## [1] 2.404762
## [2] 2.404762
## [3] 2.404762
## [4] 2.404762
## [5] 2.404762
## [6] 2.346109
## [7] 2.346109
## [8] 2.343101
## [9] 2.339768
## [10] 2.331890
## [11] 2.324603
## [12] 2.284524
## [13] 2.214912
## [14] 2.129932
## [15] 2.118481
## [16] 2.046606
## [17] 2.022186
## [18] 2.016897
## [19] 1.961779
## [20] 1.911477
## [21] 1.903770
## [22] 1.819820
## [23] 1.818235
## [24] 1.803571
## [25] 1.803571
## [26] 1.777433
## [27] 1.697479
## [28] 1.687552
## [29] 1.674745
## [30] 1.643254
## [31] 1.618590
## [32] 1.603175
## [33] 1.588050
## [34] 1.575534
## [35] 1.574026
## [36] 1.565004
## [37] 1.521380
## [38] 1.514109
## [39] 1.460034
## [40] 1.442857
## [41] 1.442857
## [42] 1.434419
## [43] 1.427827
## [44] 1.394065

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## [45] 1.392231
## [46] 1.390253
## [47] 1.379781
## [48] 1.379781
## [49] 1.356532
## [50] 1.348124
## [51] 1.345036
## [52] 1.343838
## [53] 1.317678
## [54] 1.317678
## [55] 1.287056
## [56] 1.282540
## [57] 1.269180
## [58] 1.238817
## [59] 1.217601
## [60] 1.202381
## [61] 1.187894
## [62] 1.124304
##      lhs                rhs      support  confidence lift
## [1] {type=fish}          => {eggs=TRUE} 0.1287129 1.0000000 1.7118644
## [2] {type=bird}           => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [3] {feathers=TRUE}       => {eggs=TRUE} 0.1980198 1.0000000 1.7118644
## [4] {toothed=FALSE}      => {eggs=TRUE} 0.3861386 0.9750000 1.6690678
## [5] {breathes=FALSE}     => {eggs=TRUE} 0.1980198 0.9523810 1.6303471
## [6] {hair=FALSE}          => {eggs=TRUE} 0.5346535 0.9310345 1.5938048
## [7] {airborne=TRUE}      => {eggs=TRUE} 0.2178218 0.9166667 1.5692090
## [8] {aquatic=TRUE}        => {eggs=TRUE} 0.2970297 0.8333333 1.4265537
## [9] {legs=FALSE}          => {eggs=TRUE} 0.1881188 0.8260870 1.4141489
## [10] {tail=FALSE}          => {eggs=TRUE} 0.1980198 0.7692308 1.3168188
## [11] {fins=TRUE}           => {eggs=TRUE} 0.1287129 0.7647059 1.3090728
## [12] {predator=TRUE}       => {eggs=TRUE} 0.3267327 0.5892857 1.0087772
## [13] {catsize=TRUE}       => {eggs=TRUE} 0.1287129 0.2954545 0.5057781
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE} => {eggs=FALSE} 0.1881188 0.9500000
## [2] {aquatic=FALSE,predator=TRUE} => {eggs=FALSE} 0.1683168 0.6296296
## [3] {predator=TRUE,breathes=TRUE} => {eggs=FALSE} 0.2178218 0.5641026
##      lift
## [1] 2.284524
## [2] 1.514109
## [3] 1.356532
##      lhs                rhs      support  confidence
## [1] {hair=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2871287 0.9666667
## [2] {toothed=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8857143
## [3] {aquatic=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2574257 0.8387097
## [4] {feathers=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.8157895
## [5] {breathes=TRUE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7948718
## [6] {legs=TRUE,catsize=TRUE} => {eggs=FALSE} 0.2772277 0.7567568
## [7] {airborne=FALSE,catsize=TRUE} => {eggs=FALSE} 0.3069307 0.7560976
## [8] {predator=FALSE,catsize=TRUE} => {eggs=FALSE} 0.1188119 0.7500000
## [9] {fins=FALSE,catsize=TRUE} => {eggs=FALSE} 0.2673267 0.7500000
##      lift
## [1] 2.324603
## [2] 2.129932
## [3] 2.016897

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## [4] 1.961779
## [5] 1.911477
## [6] 1.819820
## [7] 1.818235
## [8] 1.803571
## [9] 1.803571
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support
## [1] {milk=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1980198
## [2] {predator=TRUE,type=mammal}    => {catsize=TRUE} 0.1980198
## [3] {hair=TRUE,predator=TRUE}      => {catsize=TRUE} 0.1782178
## [4] {eggs=FALSE,predator=TRUE}     => {catsize=TRUE} 0.1881188
## [5] {hair=TRUE,airborne=FALSE}      => {catsize=TRUE} 0.2970297
## [6] {milk=TRUE,domestic=FALSE}       => {catsize=TRUE} 0.2574257
## [7] {domestic=FALSE,type=mammal}    => {catsize=TRUE} 0.2574257
## [8] {milk=TRUE}                     => {catsize=TRUE} 0.3168317
## [9] {type=mammal}                   => {catsize=TRUE} 0.3168317
## [10] {eggs=FALSE,venomous=FALSE}      => {catsize=TRUE} 0.3069307
## [11] {hair=TRUE,backbone=TRUE}        => {catsize=TRUE} 0.2970297
## [12] {hair=TRUE,tail=TRUE}            => {catsize=TRUE} 0.2475248
## [13] {eggs=FALSE,backbone=TRUE}       => {catsize=TRUE} 0.3069307
## [14] {eggs=FALSE}                    => {catsize=TRUE} 0.3069307
## [15] {hair=TRUE,venomous=FALSE}       => {catsize=TRUE} 0.2970297
## [16] {hair=TRUE,domestic=FALSE}       => {catsize=TRUE} 0.2376238
## [17] {hair=TRUE}                     => {catsize=TRUE} 0.2970297
## [18] {aquatic=FALSE,toothed=TRUE}     => {catsize=TRUE} 0.2574257
## [19] {toothed=TRUE,legs=TRUE}         => {catsize=TRUE} 0.2772277
## [20] {toothed=TRUE,breathes=TRUE}     => {catsize=TRUE} 0.3069307
## [21] {airborne=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3564356
## [22] {airborne=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2871287
## [23] {airborne=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3366337
## [24] {predator=TRUE,toothed=TRUE}     => {catsize=TRUE} 0.2277228
## [25] {airborne=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3960396
## [26] {airborne=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3465347
## [27] {toothed=TRUE,fins=FALSE}        => {catsize=TRUE} 0.2673267
## [28] {toothed=TRUE,venomous=FALSE}    => {catsize=TRUE} 0.3366337
## [29] {aquatic=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1584158
## [30] {predator=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.2277228
## [31] {feathers=FALSE,backbone=TRUE}   => {catsize=TRUE} 0.3663366
## [32] {aquatic=FALSE,backbone=TRUE}    => {catsize=TRUE} 0.3069307
## [33] {feathers=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3168317
## [34] {toothed=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2970297
## [35] {predator=TRUE,backbone=TRUE}    => {catsize=TRUE} 0.2673267
## [36] {backbone=TRUE,breathes=TRUE}    => {catsize=TRUE} 0.3861386
## [37] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396
## [38] {backbone=TRUE,legs=TRUE}        => {catsize=TRUE} 0.3564356
## [39] {legs=TRUE,tail=TRUE}            => {catsize=TRUE} 0.3168317
## [40] {breathes=TRUE,tail=TRUE}        => {catsize=TRUE} 0.3366337
## [41] {aquatic=FALSE,tail=TRUE}        => {catsize=TRUE} 0.2673267
## [42] {airborne=FALSE,fins=FALSE}      => {catsize=TRUE} 0.3267327
## [43] {feathers=FALSE,breathes=TRUE}   => {catsize=TRUE} 0.3267327
## [44] {predator=TRUE,tail=TRUE}        => {catsize=TRUE} 0.2277228
## [45] {predator=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.2673267
## [46] {predator=TRUE,legs=TRUE}        => {catsize=TRUE} 0.2079208

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## [47] {feathers=FALSE,legs=TRUE}      => {catsize=TRUE} 0.3069307
## [48] {feathers=FALSE,predator=TRUE}   => {catsize=TRUE} 0.2475248
## [49] {backbone=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.4158416
## [50] {backbone=TRUE,fins=FALSE}       => {catsize=TRUE} 0.3465347
## [51] {feathers=FALSE,aquatic=FALSE}   => {catsize=TRUE} 0.2673267
## [52] {fins=FALSE,tail=TRUE}           => {catsize=TRUE} 0.3069307
## [53] {venomous=FALSE,tail=TRUE}       => {catsize=TRUE} 0.3663366
## [54] {backbone=TRUE,domestic=FALSE}   => {catsize=TRUE} 0.3663366
## [55] {breathes=TRUE,venomous=FALSE}   => {catsize=TRUE} 0.3861386
## [56] {aquatic=FALSE,venomous=FALSE}   => {catsize=TRUE} 0.3069307
## [57] {feathers=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3663366
## [58] {venomous=FALSE,legs=TRUE}       => {catsize=TRUE} 0.3663366
## [59] {aquatic=FALSE}                  => {catsize=TRUE} 0.3069307
## [60] {aquatic=TRUE}                   => {catsize=TRUE} 0.1287129
## [61] {hair=FALSE}                     => {catsize=TRUE} 0.1386139
## [62] {milk=FALSE}                     => {catsize=TRUE} 0.1188119
##      confidence lift
## [1] 0.9090909 2.0867769
## [2] 0.9090909 2.0867769
## [3] 0.9000000 2.0659091
## [4] 0.8260870 1.8962451
## [5] 0.8108108 1.8611794
## [6] 0.7878788 1.8085399
## [7] 0.7878788 1.8085399
## [8] 0.7804878 1.7915743
## [9] 0.7804878 1.7915743
## [10] 0.7750000 1.7789773
## [11] 0.7692308 1.7657343
## [12] 0.7575758 1.7389807
## [13] 0.7560976 1.7355876
## [14] 0.7380952 1.6942641
## [15] 0.7317073 1.6796009
## [16] 0.7058824 1.6203209
## [17] 0.6976744 1.6014799
## [18] 0.6842105 1.5705742
## [19] 0.6666667 1.5303030
## [20] 0.6595745 1.5140232
## [21] 0.6428571 1.4756494
## [22] 0.6304348 1.4471344
## [23] 0.6296296 1.4452862
## [24] 0.6216216 1.4269042
## [25] 0.6153846 1.4125874
## [26] 0.6140351 1.4094896
## [27] 0.6136364 1.4085744
## [28] 0.5964912 1.3692185
## [29] 0.5925926 1.3602694
## [30] 0.5897436 1.3537296
## [31] 0.5873016 1.3481241
## [32] 0.5849057 1.3426244
## [33] 0.5818182 1.3355372
## [34] 0.5769231 1.3243007
## [35] 0.5744681 1.3186654
## [36] 0.5652174 1.2974308
## [37] 0.5633803 1.2932138

```

```

## [38] 0.5625000 1.2911932
## [39] 0.5614035 1.2886762
## [40] 0.5573770 1.2794337
## [41] 0.5510204 1.2648423
## [42] 0.5500000 1.2625000
## [43] 0.5500000 1.2625000
## [44] 0.5476190 1.2570346
## [45] 0.5400000 1.2395455
## [46] 0.5384615 1.2360140
## [47] 0.5344828 1.2268809
## [48] 0.5319149 1.2209865
## [49] 0.5316456 1.2203682
## [50] 0.5303030 1.2172865
## [51] 0.5294118 1.2152406
## [52] 0.5254237 1.2060863
## [53] 0.5211268 1.1962228
## [54] 0.5211268 1.1962228
## [55] 0.5200000 1.1936364
## [56] 0.5081967 1.1665425
## [57] 0.5068493 1.1634496
## [58] 0.5000000 1.1477273
## [59] 0.4769231 1.0947552
## [60] 0.3611111 0.8289141
## [61] 0.2413793 0.5540752
## [62] 0.2000000 0.4590909

##      lhs                                rhs      support  confidence lift
## [1] {backbone=FALSE} => {catsize=FALSE} 0.1683168 0.9444444 1.6734893
## [2] {airborne=TRUE}  => {catsize=FALSE} 0.2079208 0.8750000 1.5504386
## [3] {milk=FALSE}     => {catsize=FALSE} 0.4752475 0.8000000 1.4175439
## [4] {eggs=TRUE}       => {catsize=FALSE} 0.4554455 0.7796610 1.3815046
## [5] {tail=FALSE}      => {catsize=FALSE} 0.1980198 0.7692308 1.3630229
## [6] {breathes=FALSE}  => {catsize=FALSE} 0.1584158 0.7619048 1.3500418
## [7] {type=bird}       => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [8] {feathers=TRUE}    => {catsize=FALSE} 0.1386139 0.7000000 1.2403509
## [9] {legs=FALSE}       => {catsize=FALSE} 0.1584158 0.6956522 1.2326468
## [10] {aquatic=TRUE}     => {catsize=FALSE} 0.2277228 0.6388889 1.1320663
## [11] {predator=TRUE}    => {catsize=FALSE} 0.2772277 0.5000000 0.8859649
## [12] {airborne=FALSE} => {catsize=FALSE} 0.3564356 0.4675325 0.8284347
## [13] {hair=TRUE}       => {catsize=FALSE} 0.1287129 0.3023256 0.5356997
## [14] {eggs=FALSE}     => {catsize=FALSE} 0.1089109 0.2619048 0.4640769

##      lhs                                rhs      support  confidence
## [1] {milk=TRUE,predator=TRUE} => {catsize=TRUE} 0.1980198 0.9090909
## [2] {predator=TRUE,type=mammal} => {catsize=TRUE} 0.1980198 0.9090909
## [3] {hair=TRUE,predator=TRUE}   => {catsize=TRUE} 0.1782178 0.9000000
## [4] {eggs=FALSE,predator=TRUE}  => {catsize=TRUE} 0.1881188 0.8260870
## [5] {predator=TRUE,toothed=TRUE} => {catsize=TRUE} 0.2277228 0.6216216
## [6] {aquatic=FALSE,predator=TRUE} => {catsize=TRUE} 0.1584158 0.5925926
## [7] {predator=TRUE,breathes=TRUE} => {catsize=TRUE} 0.2277228 0.5897436
## [8] {predator=TRUE,backbone=TRUE} => {catsize=TRUE} 0.2673267 0.5744681
## [9] {predator=TRUE,tail=TRUE}    => {catsize=TRUE} 0.2277228 0.5476190
## [10] {predator=TRUE,venomous=FALSE} => {catsize=TRUE} 0.2673267 0.5400000
## [11] {predator=TRUE,legs=TRUE}   => {catsize=TRUE} 0.2079208 0.5384615
## [12] {feathers=FALSE,predator=TRUE} => {catsize=TRUE} 0.2475248 0.5319149
##      lift

```

```

## [1] 2.086777
## [2] 2.086777
## [3] 2.065909
## [4] 1.896245
## [5] 1.426904
## [6] 1.360269
## [7] 1.353730
## [8] 1.318665
## [9] 1.257035
## [10] 1.239545
## [11] 1.236014
## [12] 1.220986

##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297 0.8108108
## [2] {airborne=FALSE,breathes=TRUE} => {catsize=TRUE} 0.3564356 0.6428571
## [3] {airborne=FALSE,aquatic=FALSE} => {catsize=TRUE} 0.2871287 0.6304348
## [4] {airborne=FALSE,legs=TRUE}     => {catsize=TRUE} 0.3366337 0.6296296
## [5] {airborne=FALSE,backbone=TRUE} => {catsize=TRUE} 0.3960396 0.6153846
## [6] {airborne=FALSE,tail=TRUE}      => {catsize=TRUE} 0.3465347 0.6140351
## [7] {airborne=FALSE,venomous=FALSE} => {catsize=TRUE} 0.3960396 0.5633803
## [8] {airborne=FALSE,fins=FALSE}     => {catsize=TRUE} 0.3267327 0.5500000

##      lift
## [1] 1.861179
## [2] 1.475649
## [3] 1.447134
## [4] 1.445286
## [5] 1.412587
## [6] 1.409490
## [7] 1.293214
## [8] 1.262500

##      lhs                                rhs      support  confidence
## [1] {hair=TRUE,predator=TRUE}    => {catsize=TRUE} 0.1782178 0.9000000
## [2] {hair=TRUE,airborne=FALSE}    => {catsize=TRUE} 0.2970297 0.8108108
## [3] {hair=TRUE,backbone=TRUE}     => {catsize=TRUE} 0.2970297 0.7692308
## [4] {hair=TRUE,tail=TRUE}         => {catsize=TRUE} 0.2475248 0.7575758
## [5] {hair=TRUE,venomous=FALSE}     => {catsize=TRUE} 0.2970297 0.7317073
## [6] {hair=TRUE,domestic=FALSE}     => {catsize=TRUE} 0.2376238 0.7058824

##      lift
## [1] 2.065909
## [2] 1.861179
## [3] 1.765734
## [4] 1.738981
## [5] 1.679601
## [6] 1.620321

##      lhs                                rhs      support  confidence
## [1] {eggs=FALSE,predator=TRUE}    => {catsize=TRUE} 0.1881188 0.8260870
## [2] {eggs=FALSE,venomous=FALSE}    => {catsize=TRUE} 0.3069307 0.7750000
## [3] {eggs=FALSE,backbone=TRUE}     => {catsize=TRUE} 0.3069307 0.7560976

##      lift
## [1] 1.896245
## [2] 1.778977
## [3] 1.735588
## [1] "Número de reglas con consecuente negado"
##      lhs                                rhs      support

```

```

## [1] {backbone=FALSE,breathes=TRUE} => {catsize=FALSE} 0.1089109
## [2] {eggs=TRUE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [3] {milk=FALSE,tail=FALSE} => {catsize=FALSE} 0.1881188
## [4] {backbone=FALSE} => {catsize=FALSE} 0.1683168
## [5] {hair=FALSE,tail=FALSE} => {catsize=FALSE} 0.1485149
## [6] {predator=FALSE,tail=FALSE} => {catsize=FALSE} 0.1089109
## [7] {airborne=TRUE} => {catsize=FALSE} 0.2079208
## [8] {feathers=FALSE,toothed=FALSE} => {catsize=FALSE} 0.1683168
## [9] {feathers=FALSE,milk=FALSE} => {catsize=FALSE} 0.3366337
## [10] {eggs=TRUE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [11] {milk=FALSE,predator=FALSE} => {catsize=FALSE} 0.2178218
## [12] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248
## [13] {milk=FALSE,fins=FALSE} => {catsize=FALSE} 0.3861386
## [14] {eggs=TRUE,aquatic=FALSE} => {catsize=FALSE} 0.2376238
## [15] {feathers=FALSE,eggs=TRUE} => {catsize=FALSE} 0.3168317
## [16] {milk=FALSE,breathes=TRUE} => {catsize=FALSE} 0.3168317
## [17] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178
## [18] {hair=FALSE,fins=FALSE} => {catsize=FALSE} 0.3465347
## [19] {milk=FALSE,toothed=TRUE} => {catsize=FALSE} 0.1683168
## [20] {hair=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2079208
## [21] {eggs=TRUE,fins=FALSE} => {catsize=FALSE} 0.3663366
## [22] {milk=FALSE} => {catsize=FALSE} 0.4752475
## [23] {eggs=TRUE,toothed=TRUE} => {catsize=FALSE} 0.1584158
## [24] {eggs=TRUE,breathes=TRUE} => {catsize=FALSE} 0.3069307
## [25] {hair=FALSE,feathers=FALSE} => {catsize=FALSE} 0.2970297
## [26] {eggs=TRUE} => {catsize=FALSE} 0.4554455
## [27] {breathes=FALSE,venomous=FALSE} => {catsize=FALSE} 0.1386139
## [28] {hair=FALSE,legs=TRUE} => {catsize=FALSE} 0.2772277
## [29] {tail=FALSE} => {catsize=FALSE} 0.1980198
## [30] {breathes=FALSE} => {catsize=FALSE} 0.1584158
## [31] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139
## [32] {type=bird} => {catsize=FALSE} 0.1386139
## [33] {feathers=TRUE} => {catsize=FALSE} 0.1386139
## [34] {legs=FALSE} => {catsize=FALSE} 0.1584158
## [35] {aquatic=TRUE,legs=TRUE} => {catsize=FALSE} 0.1188119
## [36] {predator=FALSE,domestic=FALSE} => {catsize=FALSE} 0.2178218
## [37] {aquatic=TRUE} => {catsize=FALSE} 0.2277228
## [38] {fins=FALSE,domestic=FALSE} => {catsize=FALSE} 0.4158416
## [39] {predator=TRUE} => {catsize=FALSE} 0.2772277
## [40] {airborne=FALSE} => {catsize=FALSE} 0.3564356
## [41] {hair=TRUE} => {catsize=FALSE} 0.1287129
## [42] {eggs=FALSE} => {catsize=FALSE} 0.1089109
## confidence lift
## [1] 1.0000000 1.7719298
## [2] 0.9500000 1.6833333
## [3] 0.9500000 1.6833333
## [4] 0.9444444 1.6734893
## [5] 0.9375000 1.6611842
## [6] 0.9166667 1.6242690
## [7] 0.8750000 1.5504386
## [8] 0.8500000 1.5061404
## [9] 0.8500000 1.5061404
## [10] 0.8461538 1.4993252
## [11] 0.8461538 1.4993252

```



```

## [12] 0.8333333 1.4766082
## [13] 0.8297872 1.4703247
## [14] 0.8275862 1.4664247
## [15] 0.8205128 1.4538911
## [16] 0.8205128 1.4538911
## [17] 0.8181818 1.4497608
## [18] 0.8139535 1.4422685
## [19] 0.8095238 1.4344194
## [20] 0.8076923 1.4311741
## [21] 0.8043478 1.4252479
## [22] 0.8000000 1.4175439
## [23] 0.8000000 1.4175439
## [24] 0.7948718 1.4084570
## [25] 0.7894737 1.3988920
## [26] 0.7796610 1.3815046
## [27] 0.7777778 1.3781676
## [28] 0.7777778 1.3781676
## [29] 0.7692308 1.3630229
## [30] 0.7619048 1.3500418
## [31] 0.7368421 1.3056325
## [32] 0.7000000 1.2403509
## [33] 0.7000000 1.2403509
## [34] 0.6956522 1.2326468
## [35] 0.6666667 1.1812865
## [36] 0.6470588 1.1465428
## [37] 0.6388889 1.1320663
## [38] 0.5833333 1.0336257
## [39] 0.5000000 0.8859649
## [40] 0.4675325 0.8284347
## [41] 0.3023256 0.5356997
## [42] 0.2619048 0.4640769

##      lhs                      rhs      support  confidence lift
## [1] {milk=TRUE}      => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [2] {type=mammal}    => {catsize=TRUE} 0.3168317 0.7804878 1.7915743
## [3] {eggs=FALSE}     => {catsize=TRUE} 0.3069307 0.7380952 1.6942641
## [4] {hair=TRUE}      => {catsize=TRUE} 0.2970297 0.6976744 1.6014799
## [5] {aquatic=FALSE}   => {catsize=TRUE} 0.3069307 0.4769231 1.0947552
## [6] {aquatic=TRUE}    => {catsize=TRUE} 0.1287129 0.3611111 0.8289141
## [7] {hair=FALSE}     => {catsize=TRUE} 0.1386139 0.2413793 0.5540752
## [8] {milk=FALSE}     => {catsize=TRUE} 0.1188119 0.2000000 0.4590909

##      lhs                      rhs      support  confidence
## [1] {milk=FALSE,aquatic=FALSE} => {catsize=FALSE} 0.2475248 0.8333333
## [2] {eggs=TRUE,aquatic=FALSE}   => {catsize=FALSE} 0.2376238 0.8275862
## [3] {hair=FALSE,aquatic=FALSE}  => {catsize=FALSE} 0.2079208 0.8076923

##      lift
## [1] 1.476608
## [2] 1.466425
## [3] 1.431174

##      lhs                      rhs      support  confidence
## [1] {aquatic=TRUE,fins=FALSE} => {catsize=FALSE} 0.1386139 0.7368421
## [2] {aquatic=TRUE,legs=TRUE}   => {catsize=FALSE} 0.1188119 0.6666667

##      lift
## [1] 1.305633
## [2] 1.181287

```

```

##      lhs                                rhs      support  confidence
## [1] {hair=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1485149 0.9375000
## [2] {hair=FALSE,predator=FALSE} => {catsize=FALSE} 0.1782178 0.8181818
## [3] {hair=FALSE,fins=FALSE}      => {catsize=FALSE} 0.3465347 0.8139535
## [4] {hair=FALSE,aquatic=FALSE}   => {catsize=FALSE} 0.2079208 0.8076923
## [5] {hair=FALSE,feathers=FALSE}  => {catsize=FALSE} 0.2970297 0.7894737
## [6] {hair=FALSE,legs=TRUE}       => {catsize=FALSE} 0.2772277 0.7777778
##      lift
## [1] 1.661184
## [2] 1.449761
## [3] 1.442268
## [4] 1.431174
## [5] 1.398892
## [6] 1.378168
##      lhs                                rhs      support  confidence
## [1] {milk=FALSE,tail=FALSE}      => {catsize=FALSE} 0.1881188 0.9500000
## [2] {feathers=FALSE,milk=FALSE}   => {catsize=FALSE} 0.3366337 0.8500000
## [3] {milk=FALSE,predator=FALSE}   => {catsize=FALSE} 0.2178218 0.8461538
## [4] {milk=FALSE,aquatic=FALSE}    => {catsize=FALSE} 0.2475248 0.8333333
## [5] {milk=FALSE,fins=FALSE}       => {catsize=FALSE} 0.3861386 0.8297872
## [6] {milk=FALSE,breathes=TRUE}    => {catsize=FALSE} 0.3168317 0.8205128
## [7] {milk=FALSE,toothed=TRUE}     => {catsize=FALSE} 0.1683168 0.8095238
##      lift
## [1] 1.683333
## [2] 1.506140
## [3] 1.499325
## [4] 1.476608
## [5] 1.470325
## [6] 1.453891
## [7] 1.434419

```

```
inspect(iZoo[size(iZoo)==1][c(16,21)])
```

```

##      items      support
## [1] {hair=TRUE} 0.4257426
## [2] {hair=FALSE} 0.5742574

```

```
rules1[125:127,]
```

```

##      lhs                                rhs      support  confidence
## [4]7      {toothed=TRUE} => {hair=TRUE} 0.3762376 0.6229508
## [1]33 {eggs=TRUE,toothed=TRUE} => {hair=FALSE} 0.1980198 1.0000000
## [2]21 {milk=FALSE,toothed=TRUE} => {hair=FALSE} 0.2079208 1.0000000
##      lift
## [4]7 1.463210
## [1]33 1.741379
## [2]21 1.741379

```

```
inspect(iZoo[size(iZoo)==1][c(13,23)])
```

```

##      items      support
## [1] {milk=TRUE} 0.4059406
## [2] {milk=FALSE} 0.5940594

```

```
rules1[1726:1727,]
```

```

##      lhs                                rhs      support  confidence

```

```
## [1]245          {toothed=TRUE} => {milk=TRUE} 0.3960396 0.6557377
## [1]246 {eggs=TRUE,toothed=TRUE} => {milk=FALSE} 0.1980198 1.0000000
##          lift
## [1]245 1.615354
## [1]246 1.683333
```

Paquete RKeel

```
#####
##### PAQUETE RKEEL #####
#####
library(RKEEL)
#Creamos MOPNAR para el dataset Zoo
data(Zoo)
mopnar_zoo <- MOPNAR_A(Zoo)
#Ejecutamos MOPNAR
mopnar_zoo$run()
```

```
## Executing algorithm...
## java -jar RunKeel.jarAlgorithm R6_MOPNAR_A executed successfully
#Ordenamos la salida por confianza
mopnar_zoo$sortBy("confidence")
#Mostramos las reglas
rulesZoo <- mopnar_zoo$showRules()
```

##	lhs	rhs	id	support	antecedent_support	consequent_sup
## [1]	{type= fish}	=> {fins= TRUE}	0	0.13	0.13	
## [2]	{milk= NOT FALSE}	=> {type= NOT fish}	2	0.41	0.41	
## [3]	{type= NOT mammal}	=> {milk= NOT TRUE}	3	0.60	0.60	
## [4]	{type= NOT bird}	=> {feathers= NOT TRUE}	4	0.81	0.81	
## [5]	{feathers= FALSE}	=> {type= NOT bird}	5	0.81	0.81	
## [6]	{toothed= TRUE}	=> {type= NOT bird}	6	0.61	0.61	
## [7]	{fins= NOT TRUE}	=> {type= NOT fish}	7	0.84	0.84	
## [8]	{type= bird}	=> {feathers= TRUE}	8	0.20	0.20	
## [9]	{feathers= TRUE}	=> {type= bird}	9	0.20	0.20	
## [10]	{airborne= TRUE, backbone= NOT TRUE}	=> {type= insect}	10	0.06	0.06	
## [11]	{airborne= TRUE, tail= FALSE}	=> {type= insect}	11	0.06	0.06	
## [12]	{legs= NOT [0.0, 5.9999], airborne= TRUE}	=> {type= insect}	13	0.06	0.06	
## [13]	{feathers= FALSE, backbone= TRUE}	=> {type= NOT bird}	14	0.63	0.63	
## [14]	{type= NOT mammal, airborne= TRUE}	=> {toothed= FALSE}	15	0.22	0.22	
## [15]	{airborne= TRUE, milk= FALSE}	=> {toothed= FALSE}	16	0.22	0.22	
## [16]	{type= NOT mammal, venomous= FALSE}	=> {eggs= NOT FALSE}	17	0.52	0.52	
## [17]	{type= NOT mammal, hair= FALSE}	=> {milk= NOT TRUE}	18	0.56	0.56	
## [18]	{tail= FALSE,					

```

##      toothed= FALSE}          => {backbone= FALSE}      19    0.17          0.17
## [19] {feathers= FALSE,
##      fins= NOT TRUE}          => {type= NOT fish}        20    0.64          0.64
## [20] {fins= NOT TRUE,
##      hair= NOT TRUE}          => {type= NOT mammal}      21    0.43          0.43
## [21] {legs= NOT [0.0, 5.9999],
##      tail= FALSE,
##      breathes= TRUE}          => {type= insect}          23    0.08          0.08
## [22] {legs= NOT [0.0, 5.9999],
##      breathes= TRUE}          => {type= insect}          12    0.08          0.09
## [23] {backbone= NOT TRUE,
##      airborne= FALSE}         => {type= mollusc.et.al}  22    0.10          0.12
## [24] {legs= NOT [0.0, 5.9999]} => {type= insect}         1     0.08          0.12

```

```
rulesZoo[1:9,c(1,2,3,5,7,8,9)]
```

```
## NULL
```

*#Donde podemos ver reglas que estas 9 primeras reglas, pasan de tener un soporte
#en el consecuente de entre 0.17 a 0.88 a tener confianza 1, por lo que serán
#buenas reglas, aunque habrá algunas triviales.*