

# Association Rule

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## Contents

Association Rule

```
library(arules)
```

```
## Warning: package 'arules' was built under R version 4.4.2
```

```
## Loading required package: Matrix
```

```
## Warning: package 'Matrix' was built under R version 4.4.2
```

```
##
```

```
## Attaching package: 'arules'
```

```
## The following objects are masked from 'package:base':
```

```
##
```

```
##      abbreviate, write
```

```
#data(package = 'arules')
```

```
data('Groceries')
```

```
class(Groceries)
```

```
## [1] "transactions"
```

```
## attr(,"package")
```

```
## [1] "arules"
```

```
inspect(head(Groceries))
```

```
##      items
```

```
## [1] {citrus fruit,
```

```
##      semi-finished bread,
```

```
##      margarine,
```

```
##      ready soups}
```

```
## [2] {tropical fruit,
```

```
##      yogurt,
```

```
##      coffee}
```

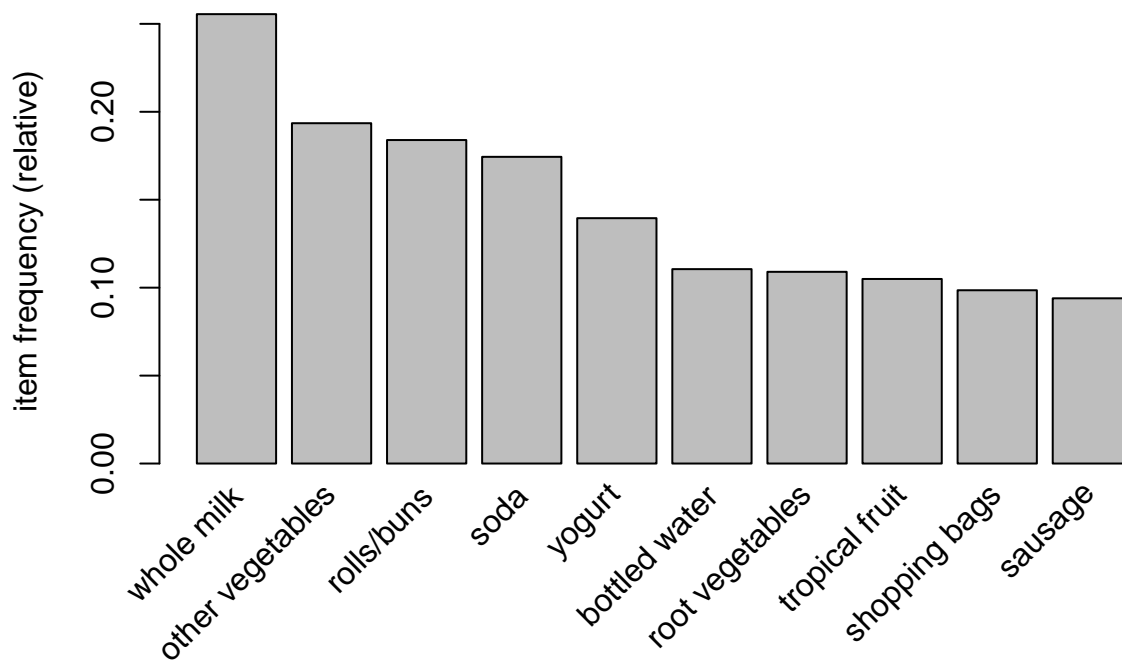
```
## [3] {whole milk}
```

```
## [4] {pip fruit,
##      yogurt,
##      cream cheese ,
##      meat spreads}
## [5] {other vegetables,
##      whole milk,
##      condensed milk,
##      long life bakery product}
## [6] {whole milk,
##      butter,
##      yogurt,
##      rice,
##      abrasive cleaner}
```

```
data = as(Groceries, 'transactions')
data
```

```
## transactions in sparse format with
## 9835 transactions (rows) and
## 169 items (columns)
```

```
itemFrequencyPlot(Groceries, topN=10)
```



```
rules = apriori(data, parameter = list(supp=0.05, conf=0.1))
```

```
## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          0.1    0.1    1 none FALSE             TRUE      5    0.05    1
## maxlen target  ext
##          10 rules TRUE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##      0.1 TRUE TRUE  FALSE TRUE     2     TRUE
##
## Absolute minimum support count: 491
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].
## sorting and recoding items ... [28 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 done [0.00s].
## writing ... [14 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].
```

```
head(rules)
```

```
## set of 6 rules
```

```
inspect(head(rules))
```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{}	=> {bottled water}	0.1105236	0.1105236	1	1	1087
## [2]	{}	=> {tropical fruit}	0.1049314	0.1049314	1	1	1032
## [3]	{}	=> {root vegetables}	0.1089985	0.1089985	1	1	1072
## [4]	{}	=> {soda}	0.1743772	0.1743772	1	1	1715
## [5]	{}	=> {yogurt}	0.1395018	0.1395018	1	1	1372
## [6]	{}	=> {rolls/buns}	0.1839349	0.1839349	1	1	1809

```
sorted_rules = sort(rules, by='lift', decreasing=TRUE)
inspect(sorted_rules[1:5])
```

	lhs	rhs	support	confidence	coverage
## [1]	{yogurt}	=> {whole milk}	0.05602440	0.4016035	0.1395018
## [2]	{whole milk}	=> {yogurt}	0.05602440	0.2192598	0.2555160
## [3]	{other vegetables}	=> {whole milk}	0.07483477	0.3867578	0.1934926
## [4]	{whole milk}	=> {other vegetables}	0.07483477	0.2928770	0.2555160
## [5]	{rolls/buns}	=> {whole milk}	0.05663447	0.3079049	0.1839349

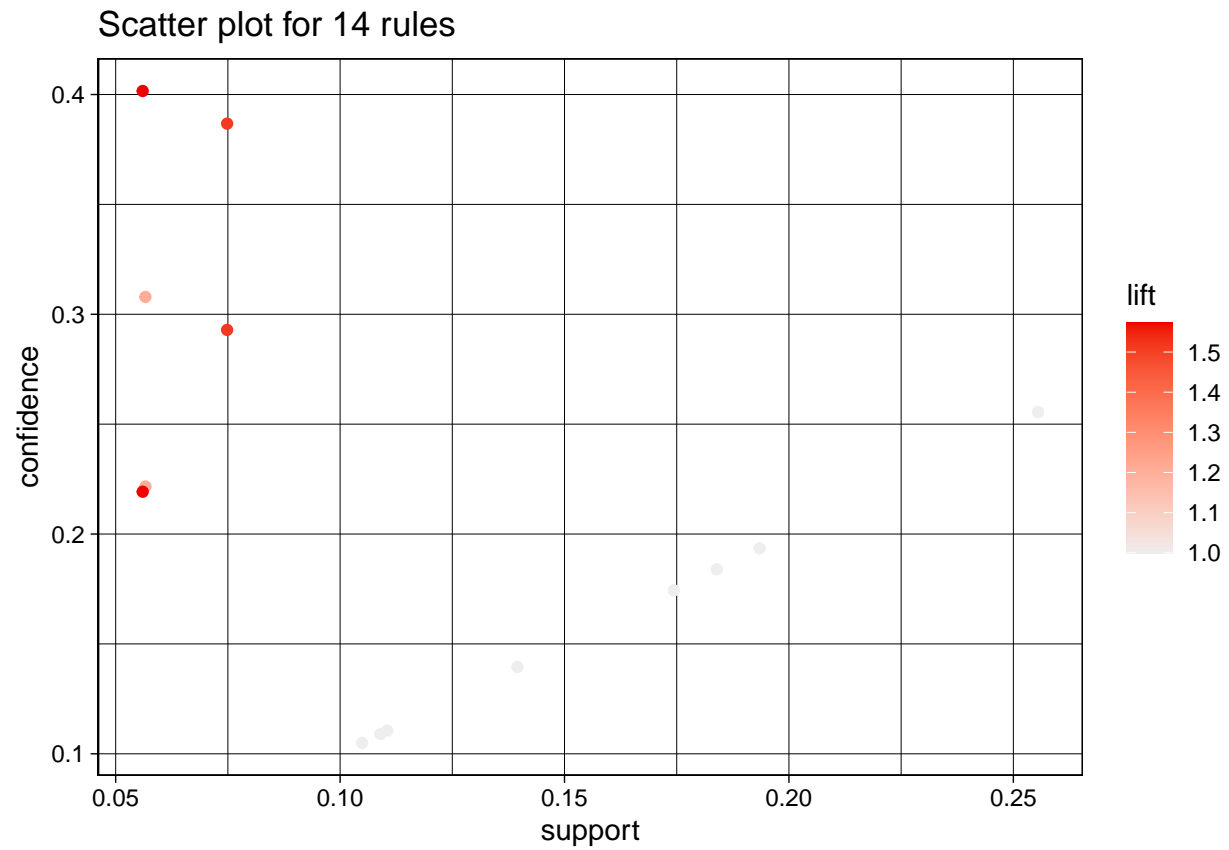
  

	lift	count
## [1]	1.571735	551
## [2]	1.571735	551
## [3]	1.513634	736
## [4]	1.513634	736
## [5]	1.205032	557

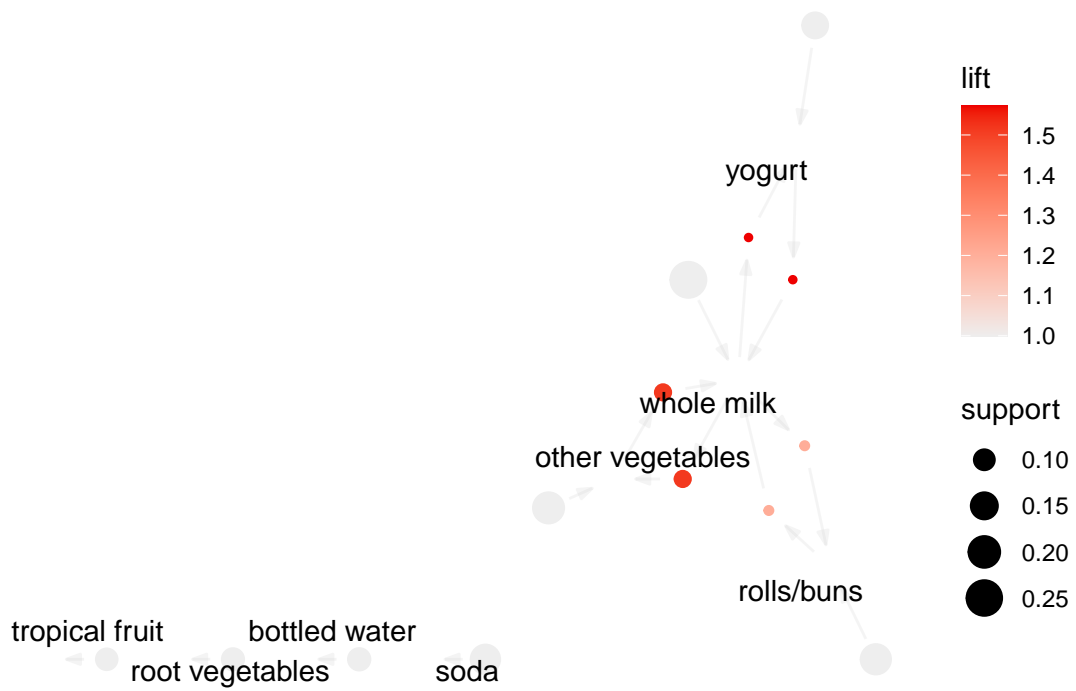
```
library(arulesViz)
```

```
## Warning: package 'arulesViz' was built under R version 4.4.2
```

```
plot(sorted_rules)
```



```
plot(sorted_rules, method = 'graph')
```



```
plot(sorted_rules, method='paracoord')
```

**Parallel coordinates plot for 6 rules**

