

STA 380, Part 2 Exercises

Yiqun Tian, Yuhan Yin, Alexandre NICOLAÏ, Soumya Swarupa Nayak

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Visual Story Telling Part 1: Green Buildings

Introduction

We tried to understand if the recommendation made by the member of the team is based on a strong relationship between the amount of the rent and the green status or if there are some confounding variables.

```
rm(list=ls())
# import library
library(ggplot2)
library(LICORS)
library(foreach)
library(mosaic)

## Loading required package: dplyr
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##   filter, lag
## The following objects are masked from 'package:base':
##   intersect, setdiff, setequal, union
## Loading required package: lattice
## Loading required package: ggformula
## Loading required package: ggstance
##
## Attaching package: 'ggstance'
## The following objects are masked from 'package:ggplot2':
##   geom_errorbarh, GeomErrorbarh
##
## New to ggformula? Try the tutorials:
##   learnr::run_tutorial("introduction", package = "ggformula")
##   learnr::run_tutorial("refining", package = "ggformula")
## Loading required package: mosaicData
## Loading required package: Matrix
```

```

## Registered S3 method overwritten by 'mosaic':
##   method                  from
##   fortify.SpatialPolygonsDataFrame ggplot2

##
## The 'mosaic' package masks several functions from core packages in order to add
## additional features. The original behavior of these functions should not be affected by this.
##
## Note: If you use the Matrix package, be sure to load it BEFORE loading mosaic.
##
## Have you tried the ggformula package for your plots?

##
## Attaching package: 'mosaic'

## The following object is masked from 'package:Matrix':
##
##   mean

## The following objects are masked from 'package:dplyr':
##
##   count, do, tally

## The following object is masked from 'package:ggplot2':
##
##   stat

## The following objects are masked from 'package:stats':
##
##   binom.test, cor, cor.test, cov, fivenum, IQR, median, prop.test,
##   quantile, sd, t.test, var

## The following objects are masked from 'package:base':
##
##   max, mean, min, prod, range, sample, sum

# Read Data
green = read.csv('greenbuildings.csv')
summary(green)

##   CS_PropertyID      cluster         size      empl_gr
## Min. : 1      Min. : 1.0      Min. : 1624      Min. :-24.950
## 1st Qu.: 157452  1st Qu.: 272.0    1st Qu.: 50891     1st Qu.: 1.740
## Median : 313253  Median : 476.0    Median : 128838    Median : 1.970
## Mean   : 453003  Mean   : 588.6    Mean   : 234638    Mean   : 3.207
## 3rd Qu.: 441188  3rd Qu.:1044.0   3rd Qu.: 294212   3rd Qu.: 2.380
## Max.   :6208103  Max.   :1230.0   Max.   :3781045   Max.   : 67.780
##                               NA's   :74
##   Rent        leasing_rate      stories       age
## Min. : 2.98  Min. : 0.00  Min. : 1.00  Min. : 0.00
## 1st Qu.: 19.50 1st Qu.: 77.85  1st Qu.: 4.00  1st Qu.: 23.00
## Median : 25.16  Median : 89.53  Median : 10.00  Median : 34.00
## Mean   : 28.42  Mean   : 82.61  Mean   : 13.58  Mean   : 47.24
## 3rd Qu.: 34.18  3rd Qu.: 96.44  3rd Qu.: 19.00  3rd Qu.: 79.00
## Max.   :250.00  Max.   :100.00  Max.   :110.00  Max.   :187.00
##
##   renovated      class_a      class_b       LEED
## Min. :0.0000  Min. :0.0000  Min. :0.0000  Min. :0.0000000

```

```

## 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.000000
## Median :0.0000 Median :0.0000 Median :0.0000 Median :0.000000
## Mean   :0.3795 Mean   :0.3999 Mean   :0.4595 Mean   :0.006841
## 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:0.000000
## Max.   :1.0000 Max.   :1.0000 Max.   :1.0000 Max.   :1.000000
##
##      Energystar    green_rating       net     amenities
## Min.   :0.00000  Min.   :0.00000  Min.   :0.00000  Min.   :0.0000
## 1st Qu.:0.00000  1st Qu.:0.00000  1st Qu.:0.00000  1st Qu.:0.0000
## Median :0.00000  Median :0.00000  Median :0.00000  Median :1.0000
## Mean   :0.08082  Mean   :0.08677  Mean   :0.03471  Mean   :0.5266
## 3rd Qu.:0.00000  3rd Qu.:0.00000  3rd Qu.:0.00000  3rd Qu.:1.0000
## Max.   :1.00000  Max.   :1.00000  Max.   :1.00000  Max.   :1.0000
##
##      cd_total_07    hd_total07    total_dd_07 Precipitation
## Min.   : 39   Min.   : 0   Min.   :2103   Min.   :10.46
## 1st Qu.: 684  1st Qu.:1419  1st Qu.:2869  1st Qu.:22.71
## Median : 966  Median :2739   Median :4979   Median :23.16
## Mean   :1229  Mean   :3432   Mean   :4661   Mean   :31.08
## 3rd Qu.:1620  3rd Qu.:4796  3rd Qu.:6413  3rd Qu.:43.89
## Max.   :5240  Max.   :7200   Max.   :8244   Max.   :58.02
##
##      Gas_Costs    Electricity_Costs cluster_rent
## Min.   :0.009487  Min.   :0.01780  Min.   : 9.00
## 1st Qu.: 0.010296 1st Qu.:0.02330  1st Qu.:20.00
## Median : 0.010296  Median :0.03274  Median :25.14
## Mean   :0.011336  Mean   :0.03096  Mean   :27.50
## 3rd Qu.:0.011816  3rd Qu.:0.03781  3rd Qu.:34.00
## Max.   :0.028914  Max.   :0.06280  Max.   :71.44
##

```

Here we can have a better idea of the spreads belongs the buildings within each features. We can observe large spreads in the total square footage of available rental space in the building, the rent charged per square foot, the occupancy rate, the age of the building, the electricity costs and the gas costs.

Therefore, we decided to separate the dataset in two. The buildings that have the green status are differentiated from the other ones.

```

# Extract the buildings with green ratings
green_only = subset(green, green_rating==1)
dim(green_only)

```

```
## [1] 685 23
```

We now have a dataset composed of 685 observations against 7894 previously.

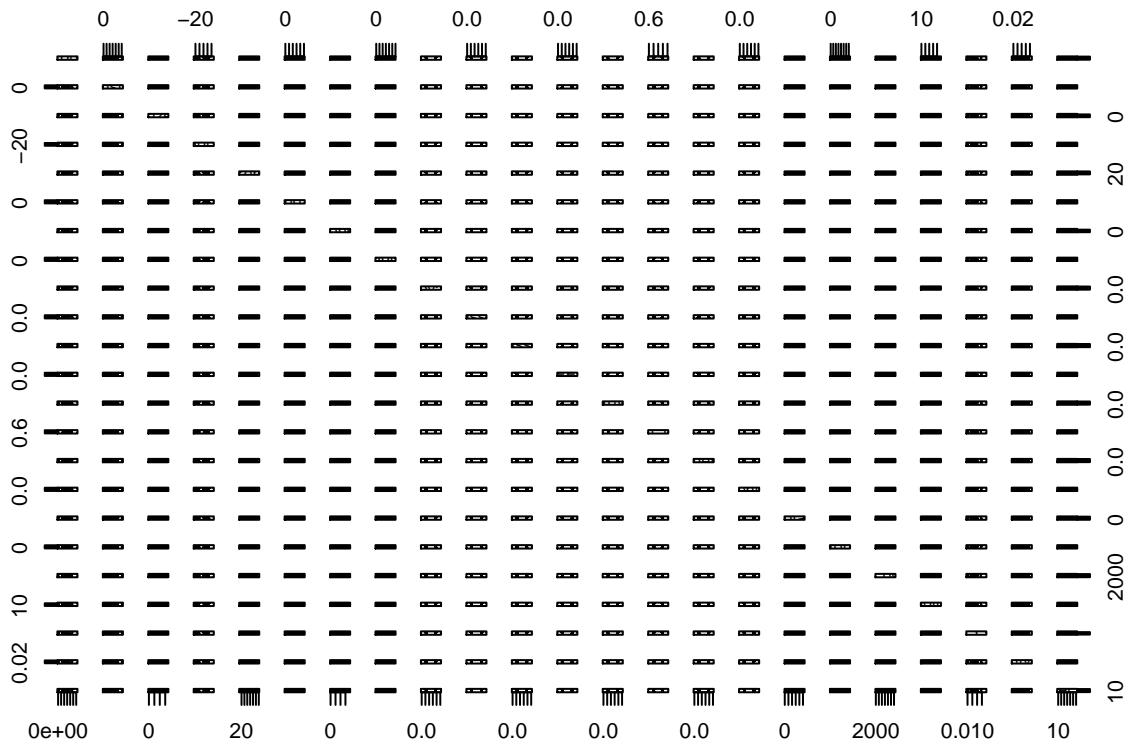
Understand the relationship between the rent and the green status

Relationship between the features

We then analyzed this subset through pairwise between the features.

First we start with all the features :

```
pairs(green_only)
```



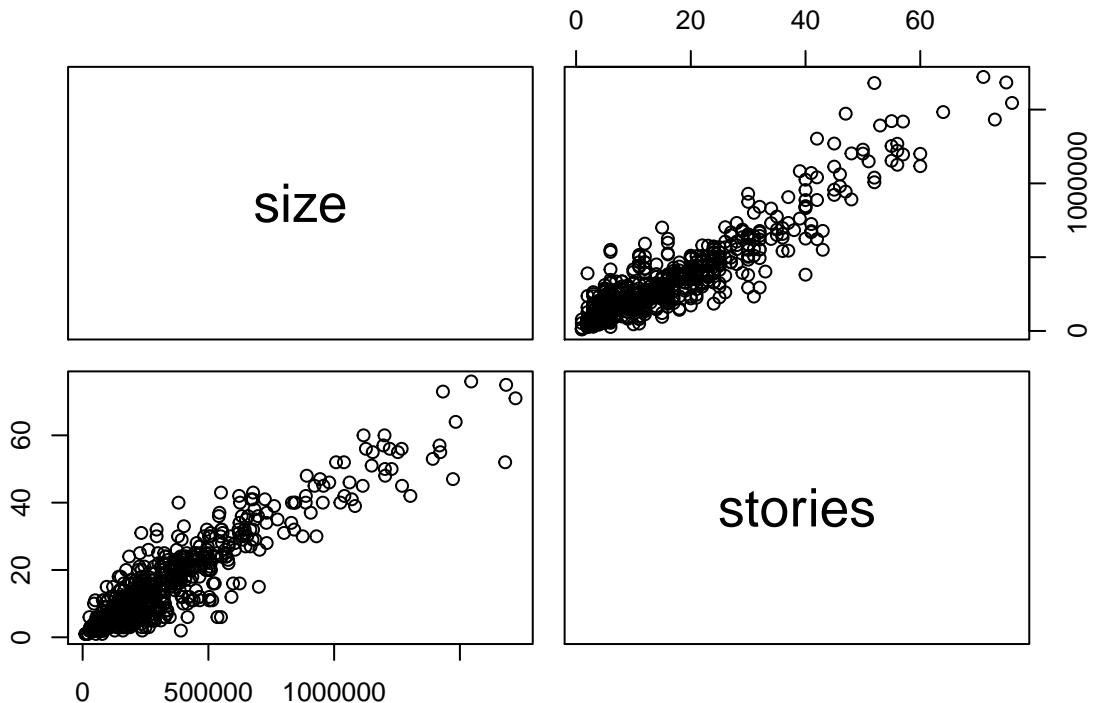
That way we already identify some relationships between the features.

We decided to look closer at the following ones:

Size and Stories / Rent and cluster_rent / cd.total.07 and hd.total07/ hd.total07 and total.dd.07.

Size and Stories:

```
pairs(~size + stories, green_only)
```



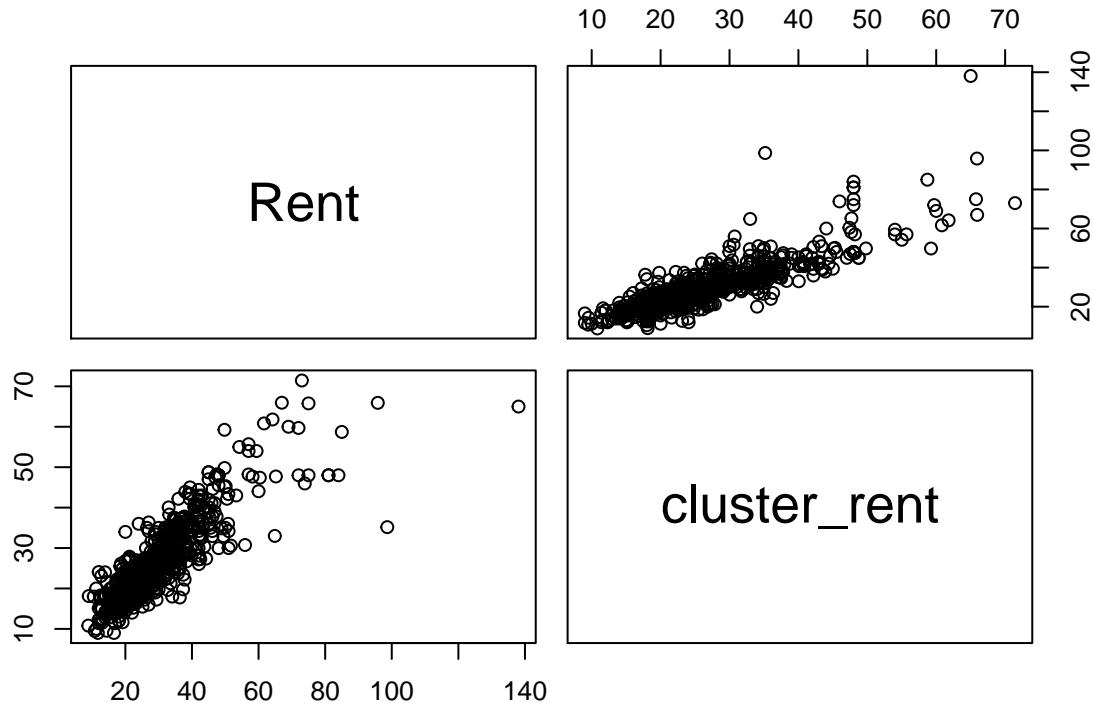
We identified a positive correlation between size and stories

- size: the total square footage of available rental space in the building.
- stories: the height of the building in stories.

The total square footage of available rental space in the building becomes more important with the height of the building in stories.

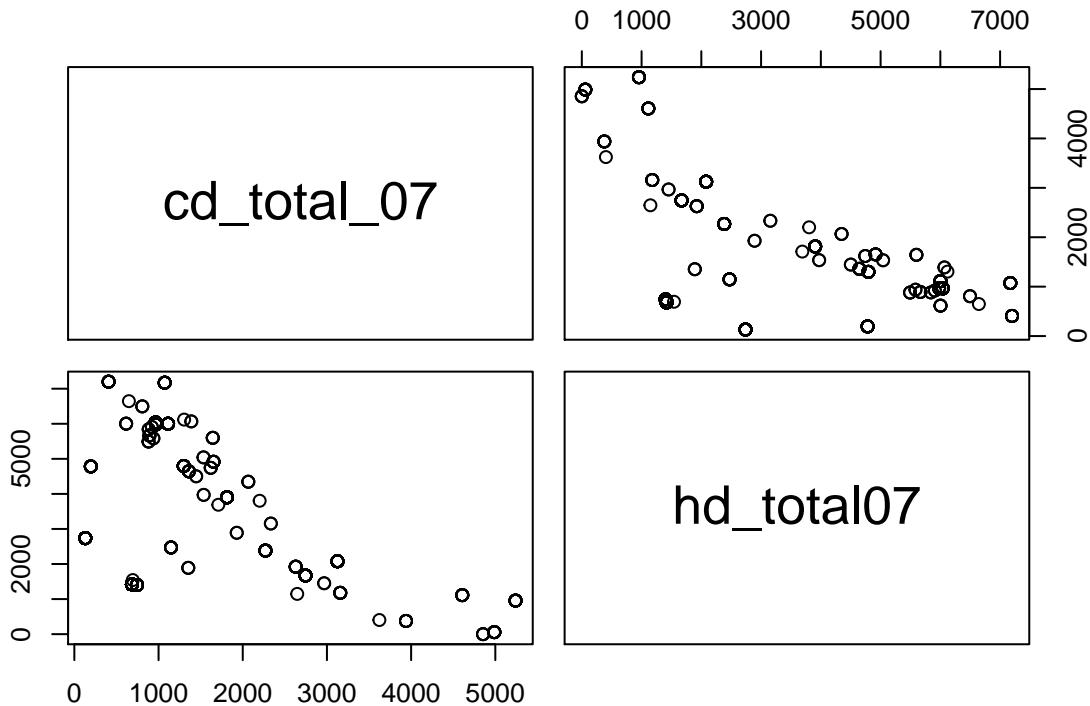
Rent and cluster_rent:

```
pairs(~Rent + cluster_rent, green_only)
```



Here we understand that the rent charged to the tenants in the building will depend of the location.

cd.total.07 and hd.total07



This pairwise reveal an obvious negative relationship. The days a green building needs cooling don't needs heating.

Through pairwise we better understand the relationships between the features and now we will try to understand what features can influence the amount of the rent to know if investing based on the median market rent is a good recommandation.

Simple linear regression

```
## 
## Call:
## lm(formula = Rent ~ size, data = green_only)
## 
## Residuals:
##      Min       1Q   Median       3Q      Max 
## -21.399  -8.546  -2.542   5.382 108.237 
## 
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) 3.043e+01 7.450e-01  40.85 <2e-16 ***
## size        -1.282e-06 1.709e-06  -0.75  0.453    
## ---        
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 12.95 on 683 degrees of freedom
## Multiple R-squared:  0.0008232, Adjusted R-squared: -0.0006397 
## F-statistic: 0.5627 on 1 and 683 DF,  p-value: 0.4534
```

The size feature is not significant to explain the amount of the rent paid by the tenants.

```
## 
## Call:
## lm(formula = Rent ~ stories, data = green_only)
```

```

##
## Residuals:
##      Min     1Q Median     3Q    Max
## -21.256 -8.560 -2.476  5.522 108.200
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) 30.41054   0.75624  40.21 <2e-16 ***
## stories     -0.02573   0.03730   -0.69    0.49    
## ---        
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.96 on 683 degrees of freedom
## Multiple R-squared:  0.0006966, Adjusted R-squared: -0.0007665 
## F-statistic: 0.4761 on 1 and 683 DF, p-value: 0.4904

```

Neither are the stories.

```

##
## Call:
## lm(formula = Rent ~ cluster_rent, data = green_only)
##
## Residuals:
##      Min     1Q Median     3Q    Max
## -18.121 -3.487 -0.775  2.582 64.604
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) -0.64470   0.75343  -0.856   0.392    
## cluster_rent 1.14016   0.02635  43.269 <2e-16 ***
## ---        
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6.7 on 683 degrees of freedom
## Multiple R-squared:  0.7327, Adjusted R-squared:  0.7323  
## F-statistic: 1872 on 1 and 683 DF, p-value: < 2.2e-16

```

But the average rent per square foot per calendar year in the building's local market is very significant. It tends to explain very well the rent.

```

##
## Call:
## lm(formula = Rent ~ cd_total_07, data = green_only)
##
## Residuals:
##      Min     1Q Median     3Q    Max
## -22.180 -7.114 -1.870  4.478 107.683
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) 34.1973243  0.7324387  46.69 < 2e-16 ***
## cd_total_07 -0.0029331  0.0003906   -7.51 1.85e-13 ***
## ---        
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.46 on 683 degrees of freedom

```

```

## Multiple R-squared:  0.07628,   Adjusted R-squared:  0.07493
## F-statistic:  56.4 on 1 and 683 DF,  p-value: 1.855e-13

```

The same for the number of cooling degree days in the building's region in 2007. The correlation is negative, the rent tend to diminish if there are enough days that allow to do not use the cooling.

```

##
## Call:
## lm(formula = Rent ~ hd_total07, data = green_only)
##
## Residuals:
##    Min      1Q  Median      3Q     Max
## -25.111 -8.021 -2.031  4.934 110.989
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 34.1108088  0.8648970 39.439 < 2e-16 ***
## hd_total07 -0.0014657  0.0002566 -5.711 1.67e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.66 on 683 degrees of freedom
## Multiple R-squared:  0.04558,   Adjusted R-squared:  0.04418
## F-statistic: 32.62 on 1 and 683 DF,  p-value: 1.674e-08

```

This result can be interprated identically but for hot days. If a building is in an area where there are enough hot days, that avoid to use heating, the rent paid will be lower.

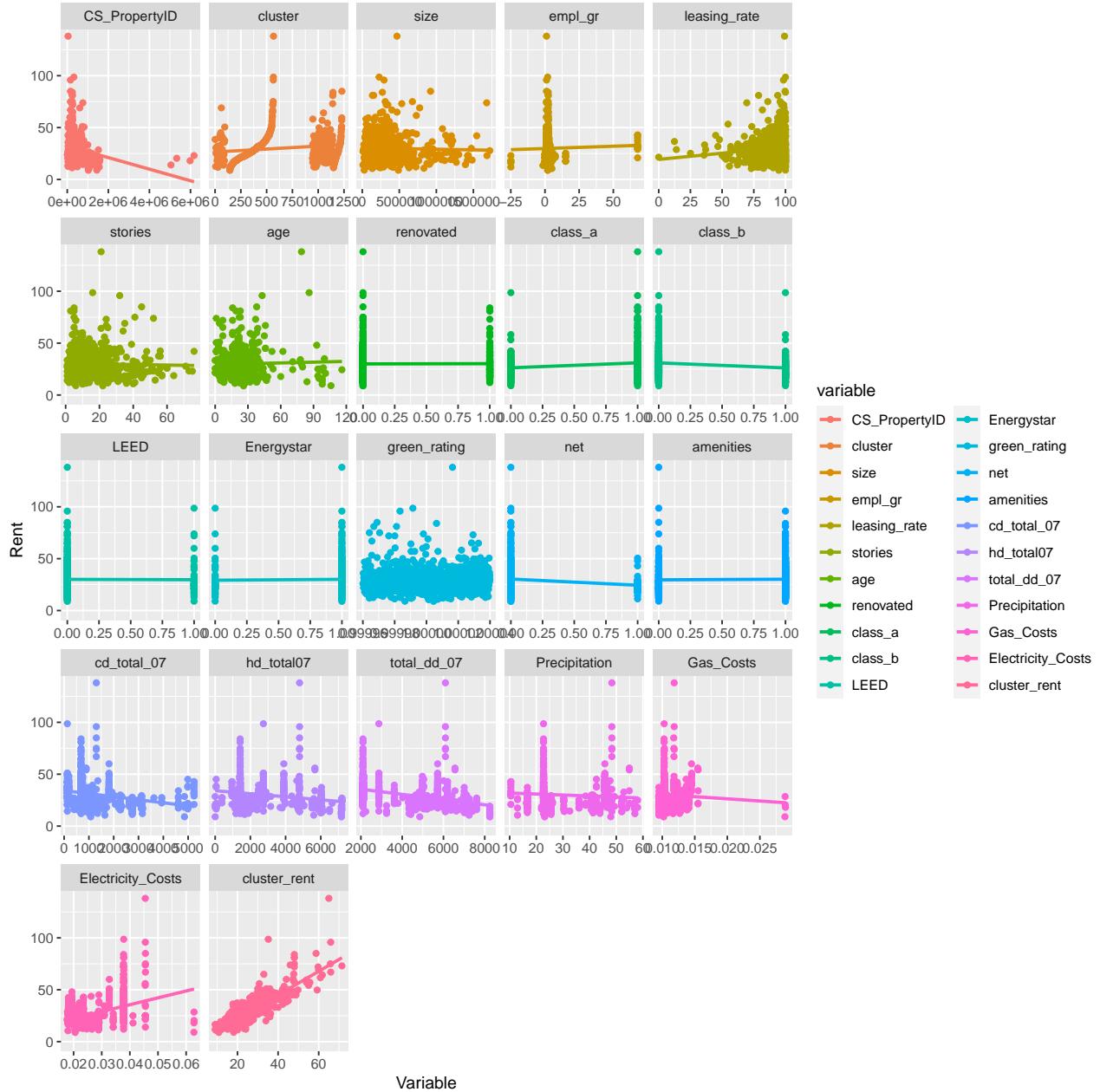
So we understand that the rent for the green buildings is very sensible to the location of the building and especially to the weither for energy consumption purpose.

To interprete visually these results, we decided to plot the simple linear regression of all the features to explain the rent:

```

## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg   ggplot2
##
## Loading required package: reshape2
## `geom_smooth()` using formula 'y ~ x'
## Warning: Removed 6 rows containing non-finite values (stat_smooth).
## Warning: Removed 6 rows containing missing values (geom_point).

```



Here we can clearly confirm visually that the rent is sensible to the weather and therefore to the price of the electricity.

It seems that heating and cooling in these buildings is done by electricity.

The rent price higher if the building is in an area with a few number of cooling/heating days since the resident will consume more electricity.

Seems like the price of the rent is dependent on whether the building will need heating or cooling and therefore the cost of electricity.

Here we can think that the surplus per footage square on the green building find its explanation from the consumption in electricity. They may be in areas that needs where the buildings needs heating or cooling.

In this case, the rent would be higher but it wouldn't mean more profits for the investor.

We did a multiple linear regression to understand better the interactions between the features with the rent.

Multiple linear regression

We tried to understand which feature has the most impact on the rent when using all the variables:

```
##  
## Call:  
## lm(formula = Rent ~ ., data = green_only)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max  
## -18.845  -3.301  -0.473   2.761  60.139  
##  
## Coefficients: (2 not defined because of singularities)  
##              Estimate Std. Error t value Pr(>|t|)  
## (Intercept) -8.369e+00 4.713e+00 -1.776 0.0762 .  
## CS_PropertyID 6.200e-07 5.868e-07  1.057 0.2910  
## cluster      1.748e-03 6.967e-04  2.509 0.0123 *  
## size         4.898e-06 2.368e-06  2.069 0.0390 *  
## empl_gr      7.097e-02 3.562e-02  1.992 0.0468 *  
## leasing_rate 3.792e-02 2.091e-02  1.814 0.0702 .  
## stories      -1.511e-02 5.103e-02 -0.296 0.7673  
## age          1.188e-02 2.006e-02  0.592 0.5540  
## renovated    -3.854e-01 6.896e-01 -0.559 0.5764  
## class_a      1.162e+00 2.641e+00  0.440 0.6602  
## class_b     -1.185e-01 2.628e+00 -0.045 0.9640  
## LEED         2.395e+00 2.520e+00  0.950 0.3423  
## Energystar   3.275e-01 2.679e+00  0.122 0.9027  
## green_rating  NA        NA        NA        NA  
## net          -7.755e-01 1.110e+00 -0.699 0.4850  
## amenities    -1.648e+00 6.491e-01 -2.539 0.0113 *  
## cd_total_07 -1.091e-04 3.277e-04 -0.333 0.7392  
## hd_total07  2.737e-04 2.249e-04  1.217 0.2240  
## total_dd_07  NA        NA        NA        NA  
## Precipitation 4.971e-02 3.997e-02  1.244 0.2141  
## Gas_Costs    -4.060e+02 2.132e+02 -1.904 0.0574 .  
## Electricity_Costs 1.389e+02 5.583e+01  2.488 0.0131 *  
## cluster_rent  1.107e+00 3.299e-02 33.541 <2e-16 ***  
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
##  
## Residual standard error: 6.517 on 658 degrees of freedom  
##   (6 observations deleted due to missingness)  
## Multiple R-squared:  0.7531, Adjusted R-squared:  0.7456  
## F-statistic: 100.3 on 20 and 658 DF,  p-value: < 2.2e-16
```

Like we have seen in the simple linear regression, the cluster rent tends to be the most important feature to explain the rent. Therefore the location of the building is what matters the most when investing.

We tried to remove this feature to highlight the other ones that can be significant for the rent:

```
##  
## Call:  
## lm(formula = Rent ~ . - cluster_rent, data = green_only)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max
```

```

## -26.772 -5.736 -1.396 3.852 89.730
##
## Coefficients: (2 not defined because of singularities)
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.070e-01 7.742e+00 -0.014 0.98897
## CS_PropertyID -2.610e-06 9.521e-07 -2.741 0.00629 **
## cluster      3.333e-03 1.143e-03  2.915 0.00368 **
## size         4.272e-06 3.894e-06  1.097 0.27301
## empl_gr      3.540e-01 5.693e-02  6.218 8.96e-10 ***
## leasing_rate 1.133e-01 3.419e-02  3.314 0.00097 ***
## stories      -2.390e-02 8.394e-02 -0.285 0.77598
## age          4.998e-02 3.295e-02  1.517 0.12970
## renovated    -1.093e+00 1.134e+00 -0.964 0.33553
## class_a      5.231e+00 4.340e+00  1.205 0.22849
## class_b      -4.435e-01 4.323e+00 -0.103 0.91831
## LEED         4.895e+00 4.143e+00  1.181 0.23783
## Energystar   2.021e+00 4.406e+00  0.459 0.64669
## green_rating NA        NA        NA        NA
## net          -1.958e+00 1.825e+00 -1.073 0.28359
## amenities    -1.779e+00 1.068e+00 -1.666 0.09616 .
## cd_total_07 -3.536e-03 5.122e-04 -6.905 1.18e-11 ***
## hd_total07  -9.617e-04 3.649e-04 -2.635 0.00861 **
## total_dd_07 NA        NA        NA        NA
## Precipitation 2.911e-01 6.467e-02  4.501 7.99e-06 ***
## Gas_Costs     -6.947e+02 3.505e+02 -1.982 0.04787 *
## Electricity_Costs 5.635e+02 8.945e+01  6.299 5.46e-10 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.72 on 659 degrees of freedom
##   (6 observations deleted due to missingness)
## Multiple R-squared:  0.3309, Adjusted R-squared:  0.3116
## F-statistic: 17.16 on 19 and 659 DF, p-value: < 2.2e-16

```

The electricity costs becomes much more significant, as the precipitation, the number of days without heating/cooling needs, the employment growth and the cluster.

Conclusion

Therefore we believe that the recommendation is a mistake. Indeed, he just based his decision on the median rent market, comparing between the green buildings and the ones without this status.

We believe that before investing, it is extremely important to evaluate the range price of the building's local market first. Then to understand the climate of the region because the price rent is very sensible to the costs of electricity.

It is counter intuitive for a green building but it seems that the green status doesn't necessarily means that the energy consumption is no more an important factor to take into account when investing. On the contrary it appears that the size of the available space to rent is way less important than those energetic factor linked to the climate of the region.

Visual story telling part 2: flights at ABIA

```

rm(list=ls())
# import library
library(ggplot2)

# Read Data
flight = read.csv('ABIA.csv', header=TRUE)
head(flight)

##   Year Month DayofMonth DayOfWeek DepTime CRSDepTime ArrTime CRSArrTime
## 1 2008     1         1         2      120      1935      309      2130
## 2 2008     1         1         2      555       600      826      835
## 3 2008     1         1         2      600       600      728      729
## 4 2008     1         1         2      601       605      727      750
## 5 2008     1         1         2      601       600      654      700
## 6 2008     1         1         2      636       645      934      932
##   UniqueCarrier FlightNum TailNum ActualElapsedTime CRSElapsedTime AirTime
## 1          9E      5746  84129E              109             115            88
## 2          AA      1614  N438AA              151             155           133
## 3          YV      2883  N922FJ              148             149           125
## 4          9E      5743  89189E              86              105            70
## 5          AA      1157  N4XAAA              53              60            38
## 6          NW      1674  N967N               178             167           145
##   ArrDelay DepDelay Origin Dest Distance TaxiIn TaxiOut Cancelled
## 1      339     345    MEM   AUS      559      3     18        0
## 2      -9      -5    AUS   ORD      978      7     11        0
## 3      -1      0    AUS   PHX      872      7     16        0
## 4     -23     -4    AUS   MEM      559      4     12        0
## 5      -6      1    AUS  DFW      190      5     10        0
## 6       2     -9    AUS  MSP     1042     11     22        0
##   CancellationCode Diverted CarrierDelay WeatherDelay NASDelay SecurityDelay
## 1                  0        339            0            0            0            0
## 2                  0        NA            NA            NA            NA            NA
## 3                  0        NA            NA            NA            NA            NA
## 4                  0        NA            NA            NA            NA            NA
## 5                  0        NA            NA            NA            NA            NA
## 6                  0        NA            NA            NA            NA            NA
##   LateAircraftDelay
## 1                  0
## 2                 NA
## 3                 NA
## 4                 NA
## 5                 NA
## 6                 NA

```

When is a good time to fly to minimize delay?

We know flight delay is frustrating. Either waiting to pick-up our loved ones or departing for a business trip, we want our flights to arrive and depart on time. We are interested in finding which flights have a higher possibility of delay, choosing over 30 minutes as significant delay time.

```

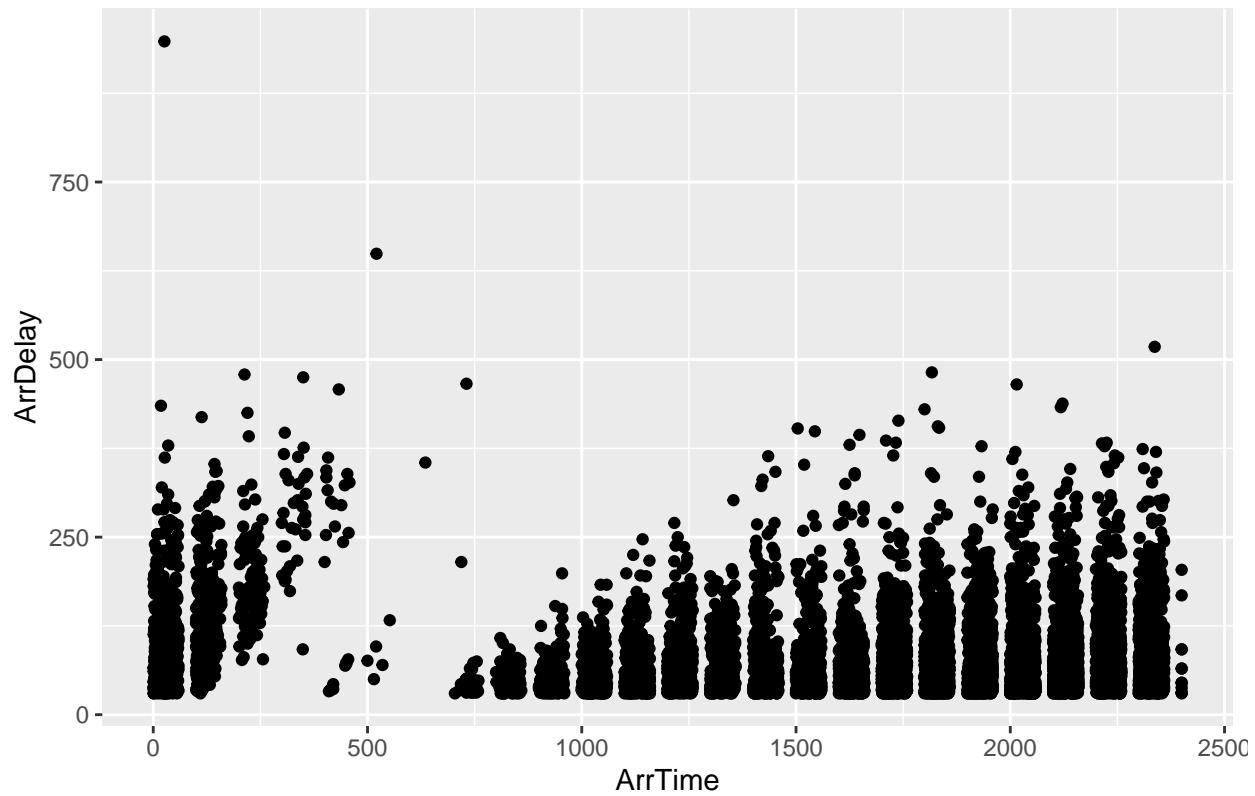
delay_arri = subset(flight, ArrDelay>=30)
delay_depart = subset(flight, DepDelay >=30)

```

```
ggplot(data = delay_arri) +
```

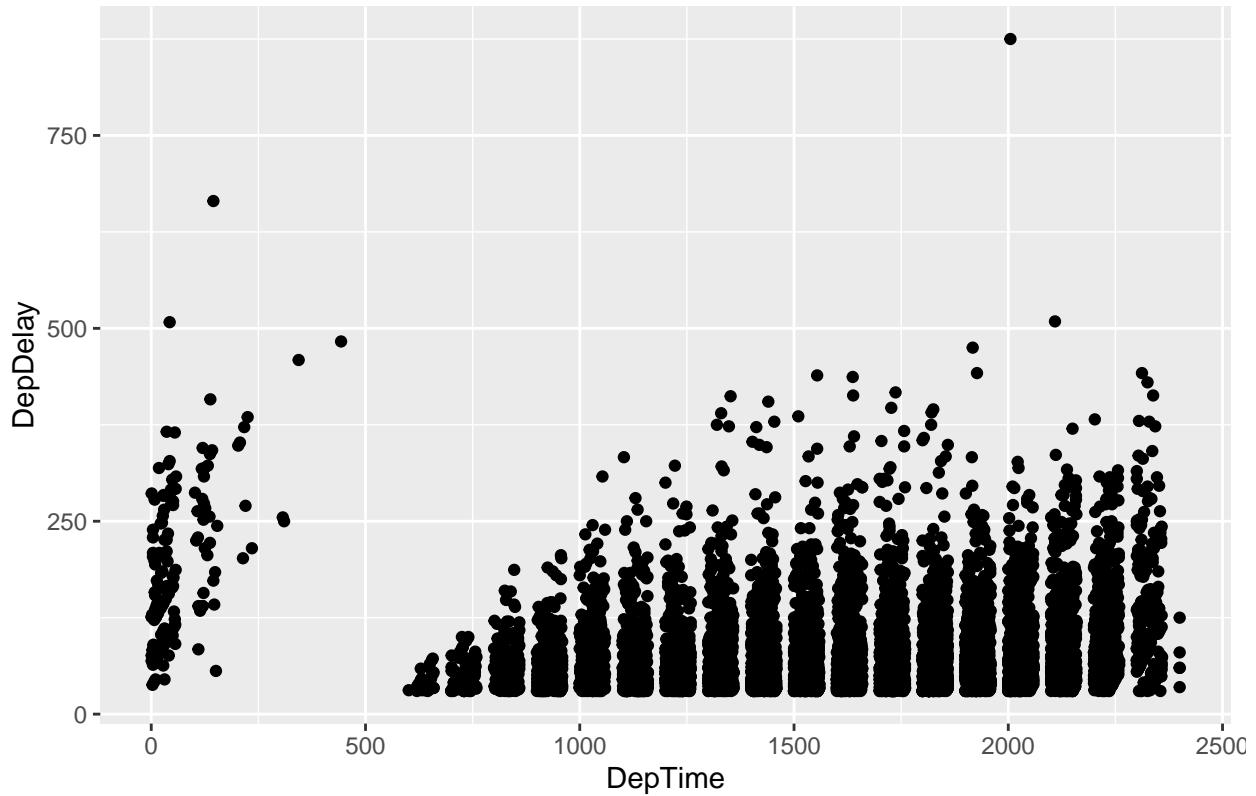
```
geom_point(mapping = aes(x = ArrTime, y = ArrDelay)) +
  labs(title = "Total Delay Arrival in 2018")
```

Total Delay Arrival in 2018



```
ggplot(data = delay_depart) +
  geom_point(mapping = aes(x = DepTime, y = DepDelay)) +
  labs(title = "Total Delay Departure in 2018")
```

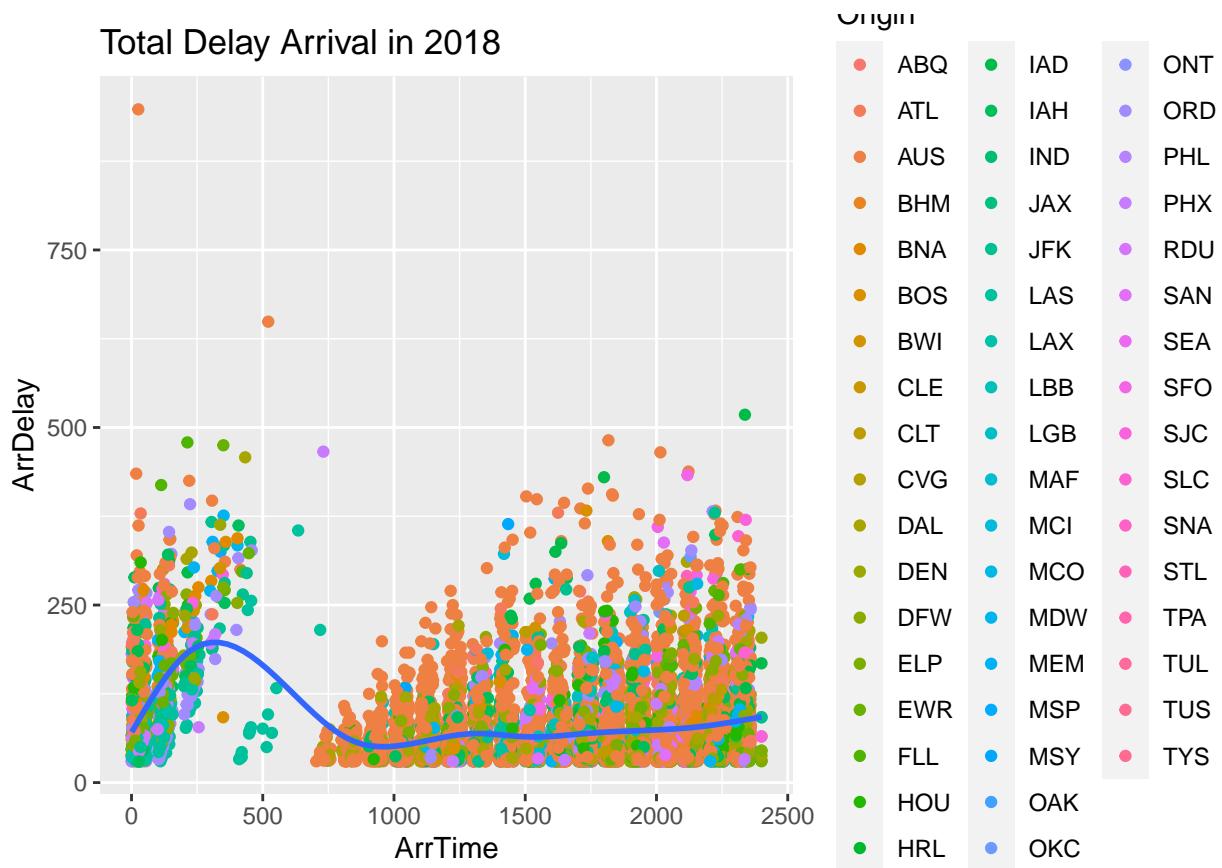
Total Delay Departure in 2018



In 2018, the majority of arrival time and departure time in Austin-Bergstrom International Airport happened between 6:00 - 2:00. We consider delay over 30 minutes is significant, and delay arrival and delay departure are spread out over the day. At 6:00 - 8:00, frequency of delay arrival and delay departure is relatively low.

```
ggplot(delay_arri, aes(ArrTime, ArrDelay)) +  
  geom_point(aes(color = Origin)) +  
  geom_smooth(se = FALSE) +  
  labs(title = "Total Delay Arrival in 2018")  
  
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```

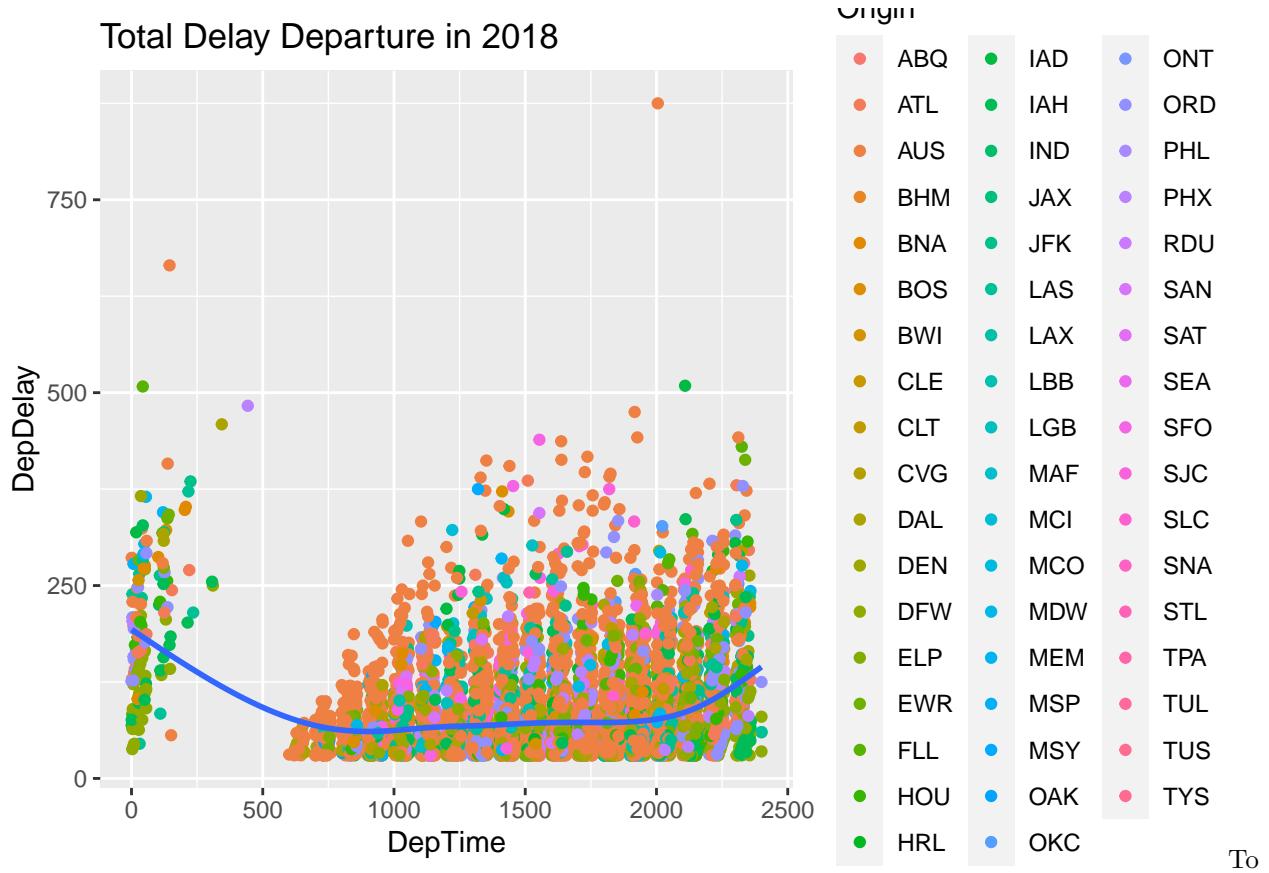
Total Delay Arrival in 2018



```
ggplot(delay_depart, aes(DepTime, DepDelay)) +
  geom_point(aes(color = Origin)) +
  geom_smooth(se = FALSE) +
  labs(title = "Total Delay Departure in 2018")
```

```
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```

Total Delay Departure in 2018

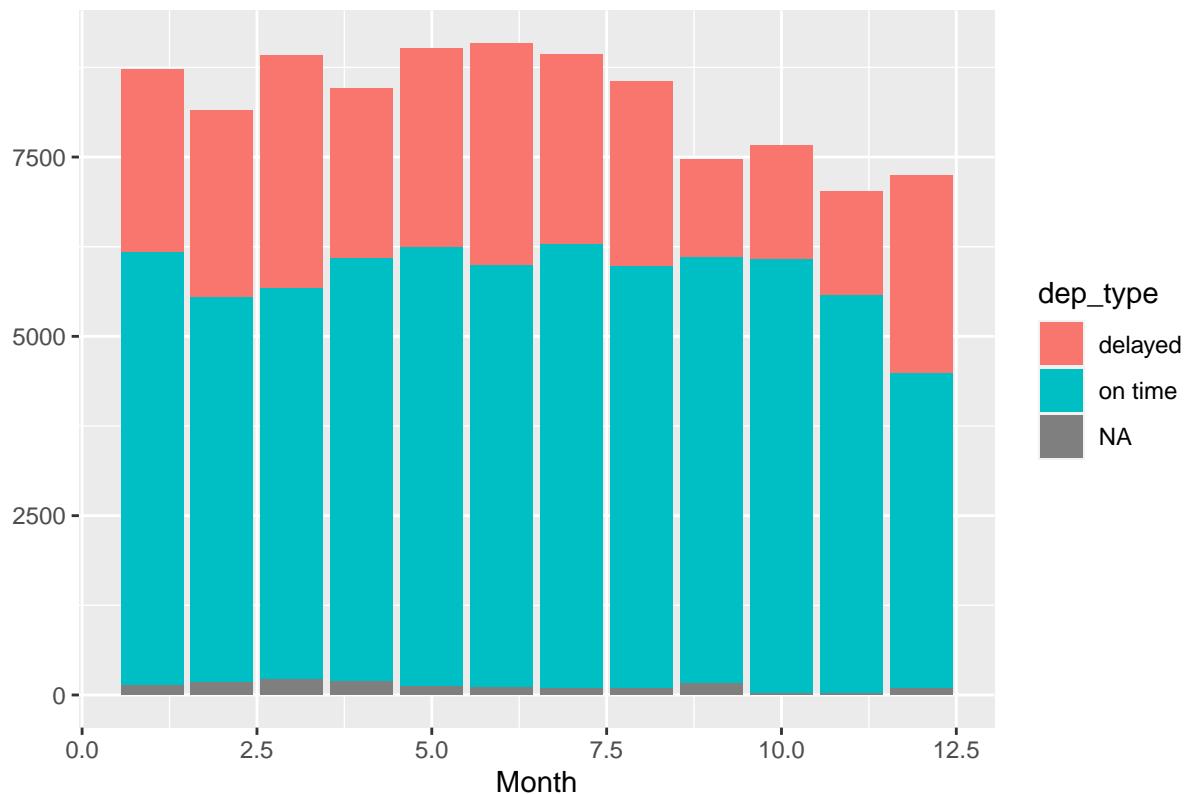


further explore the the reason of delay, we look into the origin of arrival and departure. However, this plot is not very representative to tell us which origin has a bigger chance of delay.

Which months of a year are best to fly to minimize delay?

```
delay_flight= flight%>%
  mutate(dep_type=ifelse(DepDelay<5, "on time", "delayed"))
qplot(x=Month, fill=dep_type, data=delay_flight, geom="bar", main="Delayed Frequence")
```

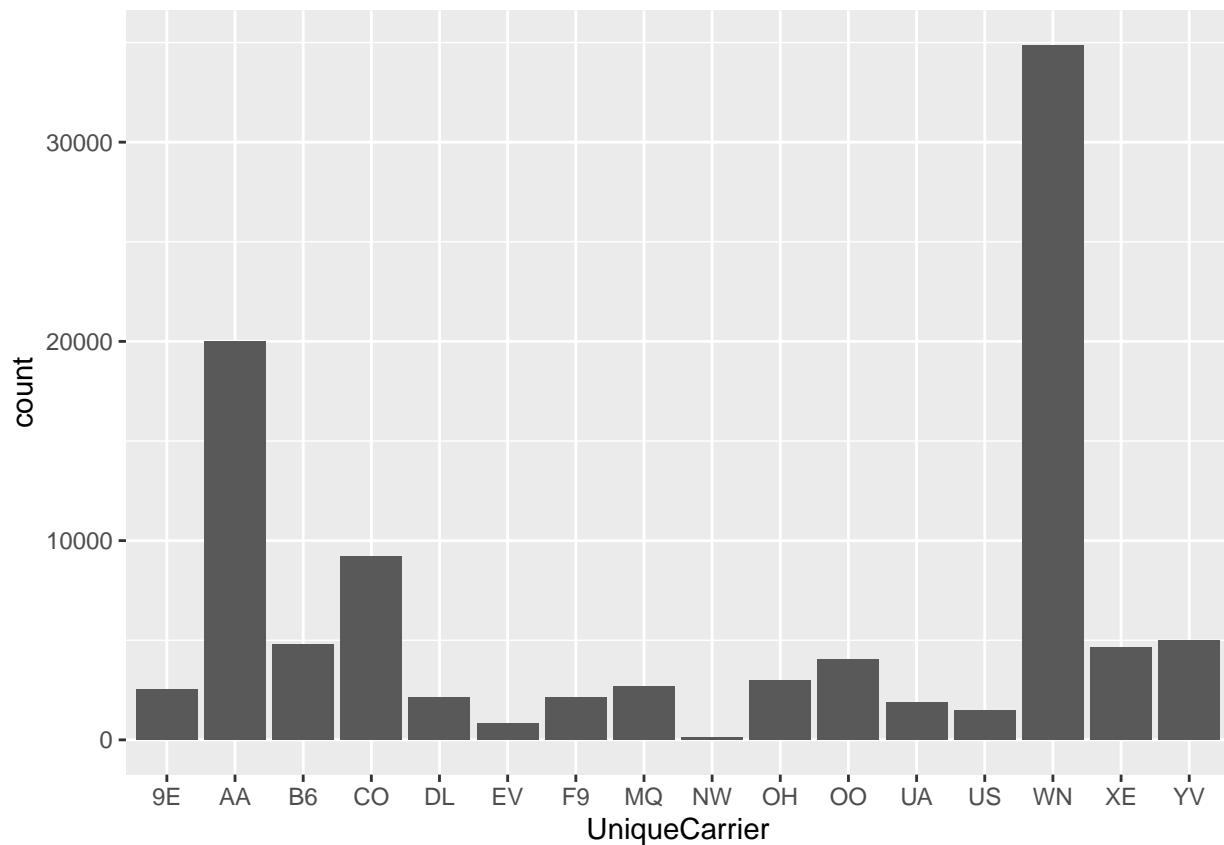
Delayed Frequency



We define delay time less than 5 minutes to be on time. We can see March, May, June, July, August and December have a higher travel frequency and higher delayed frequency. We assume during spring break, summer break and winter break, people tend to travel more. On the other hand, to avoid flights delay, we would recommend traveler to fly in September, October and November.

Choosing Carriers

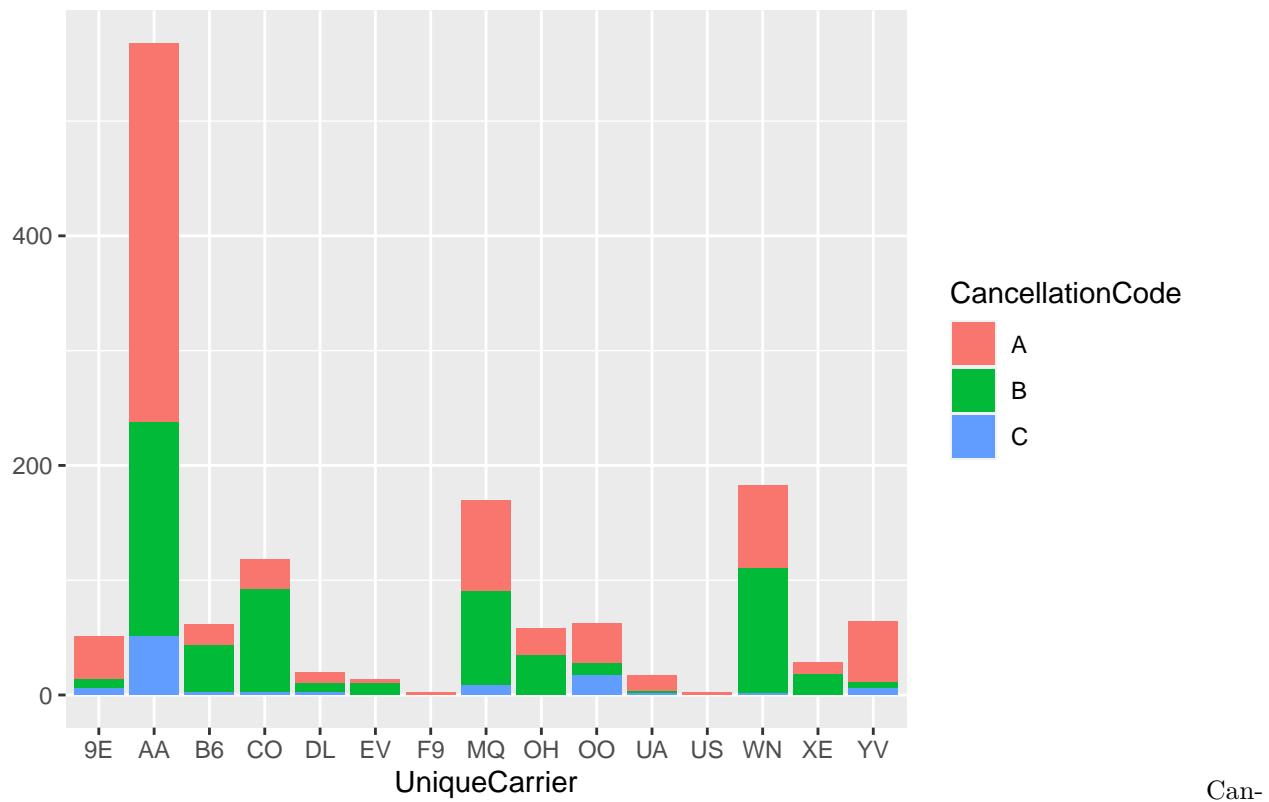
```
ggplot(flight, aes(UniqueCarrier)) +  
  geom_bar()
```



In our first overview, we can see AA, WN, and CO are the most popular carriers.

```
cancel_flight = flight %>% filter(Cancelled == 1)
qplot(x=UniqueCarrier, fill=CancellationCode, data=cancel_flight, geom="bar", main="Canceled Frequency")
```

Canceled Frequency



Cancellation Code: A = Carrier, B = Weather, C = NAS

While weather is an uncontrollable situation, we can see over all AA, MQ and WN have the highest canceled frequency due to carrier itself.

```
# Cancellation
d1 = flight %>%
  group_by(UniqueCarrier) %>%
  summarize(Cancelled_rate = sum(Cancelled=='1')/n())

## `summarise()` ungrouping output (override with ` `.groups` argument)
d1

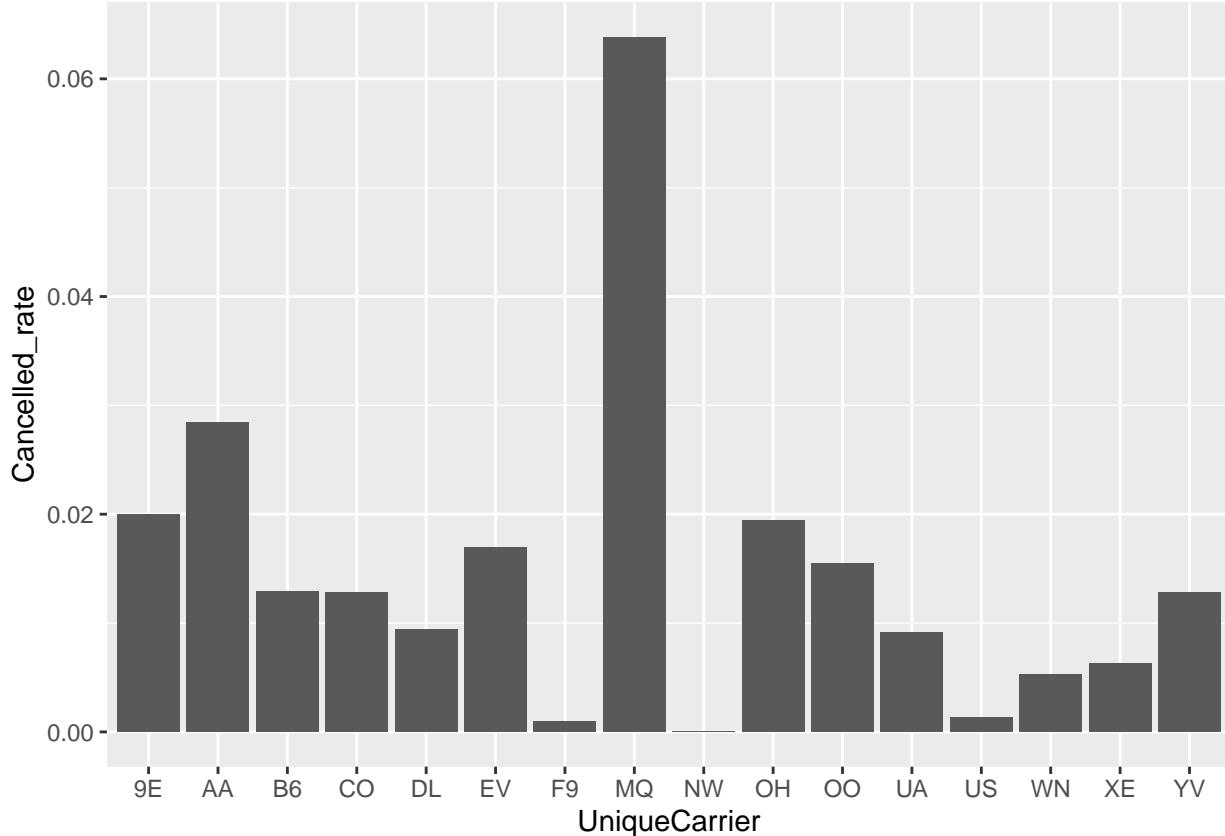
## # A tibble: 16 x 2
##   UniqueCarrier Cancelled_rate
##   <chr>           <dbl>
## 1 9E              0.0200
## 2 AA              0.0284
## 3 B6              0.0129
## 4 CO              0.0128
## 5 DL              0.00937
## 6 EV              0.0170
## 7 F9              0.000938
## 8 MQ              0.0638
## 9 NW              0
## 10 OH              0.0194
## 11 OO              0.0154
## 12 UA              0.00911
## 13 US              0.00137
```

```

## 14 WN          0.00525
## 15 XE          0.00628
## 16 YV          0.0128

ggplot(data = d1) +
  geom_bar(mapping = aes(x=UniqueCarrier, y=Cancelled_rate), stat='identity')

```



Here, we can see MQ and AA have the highest cancelled rate.

```

# Aggregate the delay times
d1 = aggregate(delay_depart$Year ~ delay_depart$UniqueCarrier, delay_depart, count)

```

```

## Warning: `data_frame()` is deprecated as of tibble 1.1.0.
## Please use `tibble()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_warnings()` to see where this warning was generated.

d2 = aggregate(delay_depart$DepDelay ~ delay_depart$UniqueCarrier, delay_depart, sum)
merged.df = merge(d1, d2, by = "delay_depart$UniqueCarrier", sort = TRUE)
merged.df

```

	delay_depart\$UniqueCarrier	delay_depart\$Year	delay_depart\$DepDelay
## 1	9E	214	16662
## 2	AA	2302	171309
## 3	B6	639	61451
## 4	CO	1031	82313
## 5	DL	243	22408
## 6	EV	135	10955
## 7	F9	150	9363
## 8	MQ	289	20119

```

## 9 NW 11 1179
## 10 OH 423 32638
## 11 OO 419 36057
## 12 UA 233 19347
## 13 US 71 4505
## 14 WN 3614 250244
## 15 XE 383 32009
## 16 YV 653 60434

```

```

names(merged.df)[1] <- "UniqueCarrier"
names(merged.df)[2] <- "Delay_Times"
names(merged.df)[3] <- "Delay_Length"

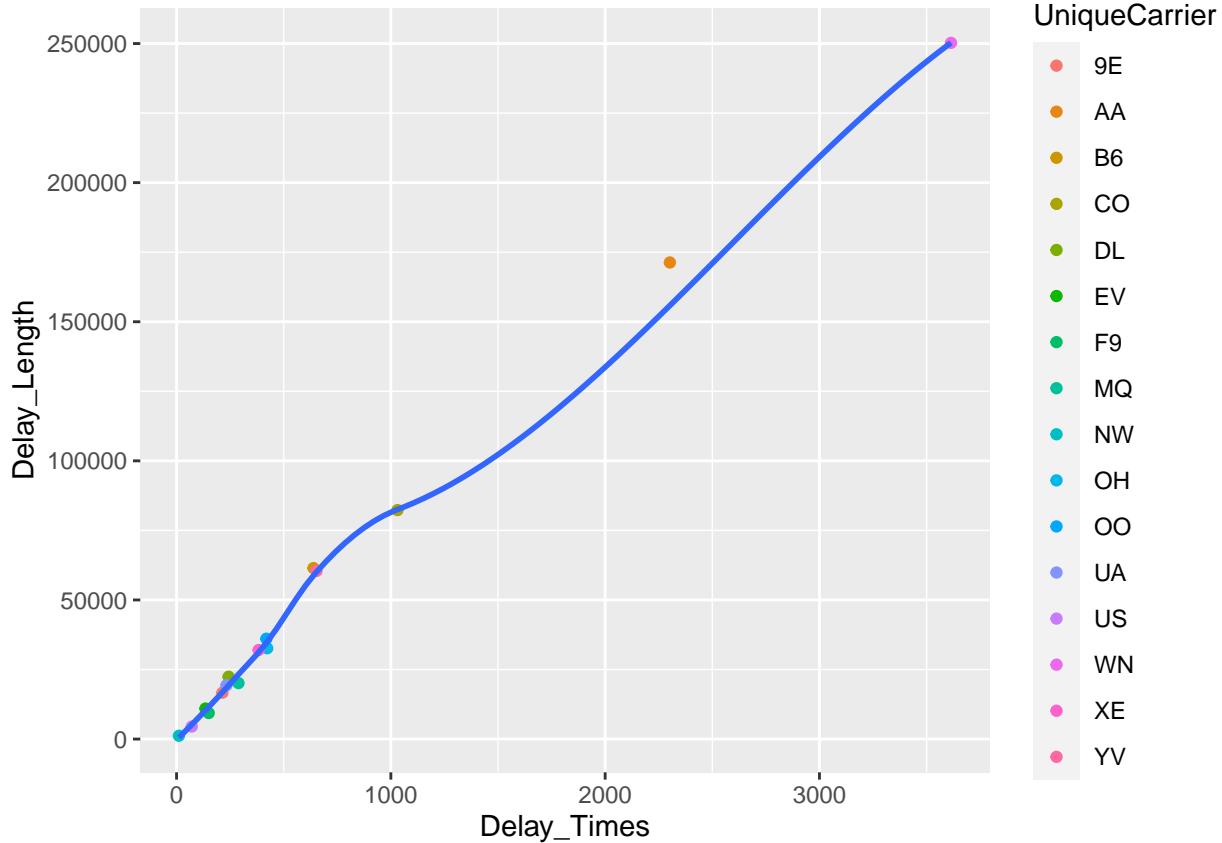
```

```

ggplot(merged.df, aes(Delay_Times, Delay_Length)) +
  geom_point(aes(color = UniqueCarrier)) +
  geom_smooth(se = FALSE)

```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



```

# bad carrier
bad.carrier = merged.df[which(merged.df$Delay_Times > 800),]
bad.carrier

```

```

##   UniqueCarrier Delay_Times Delay_Length
## 2          AA      2302     171309
## 4          CO      1031      82313
## 14         WN      3614     250244

```

```
# good carrier
good.carrier = merged.df[which(merged.df$Delay_Times <100),]
good.carrier
```

```
##    UniqueCarrier Delay_Times Delay_Length
## 9             NW          11         1179
## 13            US          71         4505
```

Although AA, WN and CO are the most popular carriers, they are not the best carriers in our choice. We suggest travelers to avoid AA, CO, WN for potential delay and MQ for potential cancellation. We recommend travelers to fly with NW and US.

Portfolio modeling

```
rm(list=ls())
library(quantmod)
library(foreach)
library(mosaic)

options("getSymbols.warning4.0"=FALSE)

# Import a few stocks
mystocks = c("DIA", "SPY", "GLD", "XLF", "IYW", "XTL", "USCI", "USO", "DBB")
P1 = c("DIA", "SPY", "GLD") # safe
P2 = c("XLF", "SPY", "GLD", "IYW", "XTL") # diverse, both index and equity
P3 = c("USCI", "USO", "DBB") # aggressive, Commodities
myprices = getSymbols(mystocks, from = "2015-01-01")

## pausing 1 second between requests for more than 5 symbols
## pausing 1 second between requests for more than 5 symbols
## pausing 1 second between requests for more than 5 symbols
## pausing 1 second between requests for more than 5 symbols
## pausing 1 second between requests for more than 5 symbols

for(ticker in mystocks) {
  expr = paste0(ticker, "a = adjustOHLC(", ticker, ")")
  eval(parse(text=expr))
}

# Combine all the returns in a matrix for each portfolio
return1 = cbind( C1C1(DIAa), C1C1(SPYa), C1C1(GLDa))
return2 = cbind( C1C1(XLFa), C1C1(SPYa), C1C1(GLDa), C1C1(IYWa), C1C1(XTLa))
return3 = cbind( C1C1(USCIa), C1C1(USOa), C1C1(DBBa))
return1 = as.matrix(na.omit(return1))
return2 = as.matrix(na.omit(return2))
return3 = as.matrix(na.omit(return3))

# Simulate many different possible futures of each random day
# equally distribution in each portfolio
initial_wealth = 100000
sim1 = foreach(i=1:5000, .combine='rbind') %do% {
  total_wealth = initial_wealth
  weights = c(0.33, 0.33, 0.34)
  holdings = weights * total_wealth
```

```

n_days = 20
wealthtracker = rep(0, n_days)
for(today in 1:n_days) {
  return.today = resample(return1, 1, orig.ids=FALSE)
  holdings = holdings + holdings*return.today
  total_wealth = sum(holdings)
  wealthtracker[today] = total_wealth
}
wt1 = wealthtracker
}

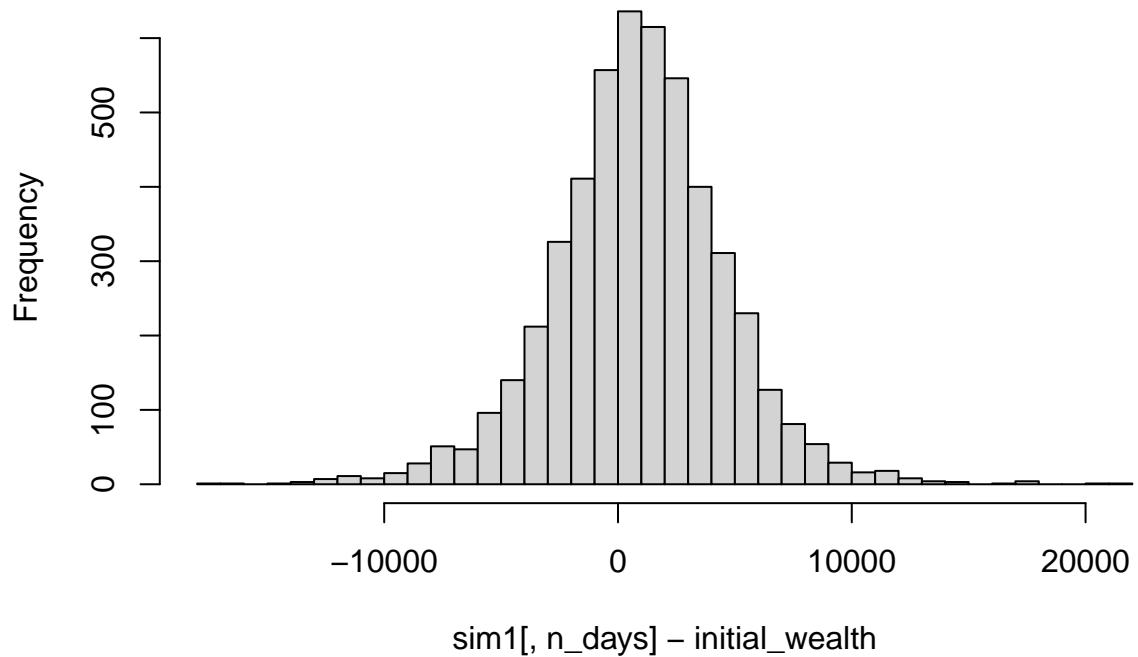
sim2 = foreach(i=1:5000, .combine='rbind') %do% {
  total_wealth = initial_wealth
  weights = c(0.2, 0.2, 0.2, 0.2, 0.2)
  holdings = weights * total_wealth
  n_days = 20
  wealthtracker = rep(0, n_days)
  for(today in 1:n_days) {
    return.today = resample(return2, 1, orig.ids=FALSE)
    holdings = holdings + holdings*return.today
    total_wealth = sum(holdings)
    wealthtracker[today] = total_wealth
  }
  wt2 = wealthtracker
}

sim3 = foreach(i=1:5000, .combine='rbind') %do% {
  total_wealth = initial_wealth
  weights = c(0.33, 0.33, 0.34)
  holdings = weights * total_wealth
  n_days = 20
  wealthtracker = rep(0, n_days)
  for(today in 1:n_days) {
    return.today = resample(return3, 1, orig.ids=FALSE)
    holdings = holdings + holdings*return.today
    total_wealth = sum(holdings)
    wealthtracker[today] = total_wealth
  }
  wt3 = wealthtracker
}

# each row is a simulated trajectory
# Profit/loss
hist(sim1[,n_days] - initial_wealth, breaks=30)

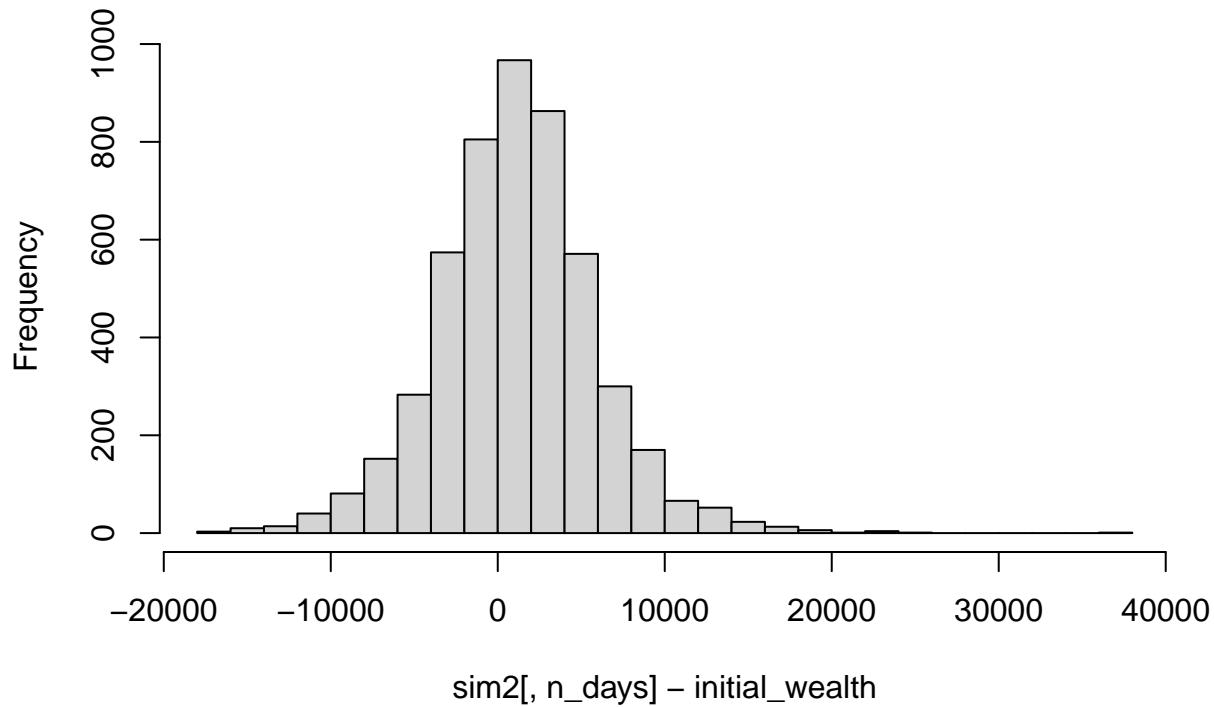
```

Histogram of sim1[, n_days] – initial_wealth



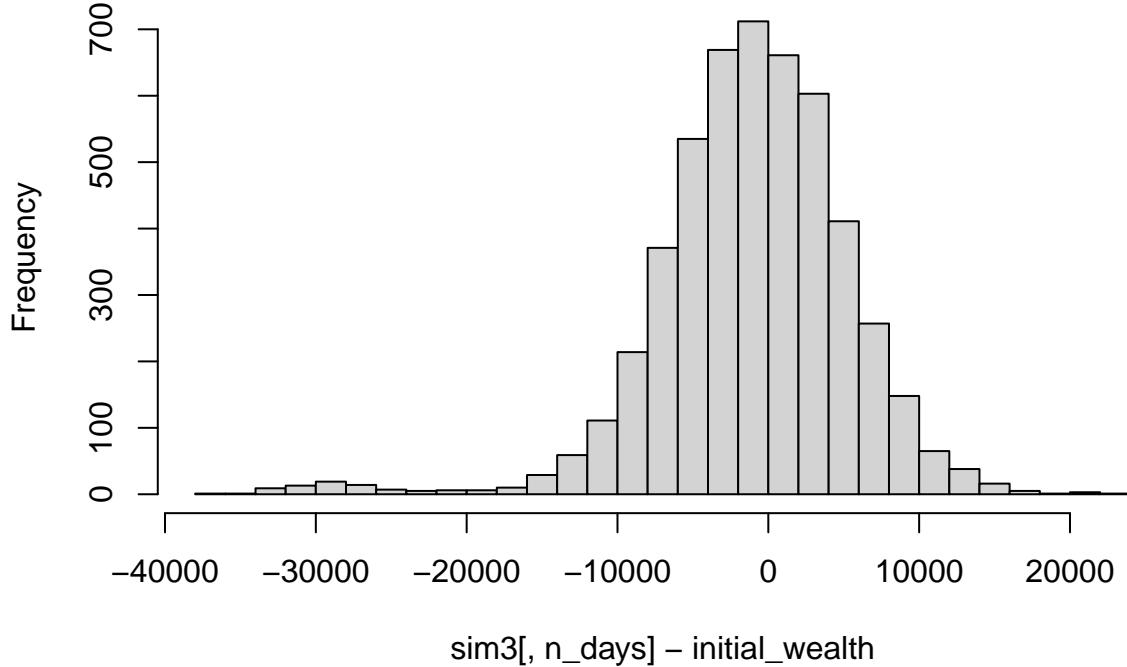
```
hist(sim2[,n_days] - initial_wealth, breaks=30)
```

Histogram of sim2[, n_days] – initial_wealth



```
hist(sim3[,n_days] - initial_wealth, breaks=30)
```

Histogram of sim3[, n_days] – initial_wealth



sim3[, n_days] – initial_wealth

```
# mean
mean1 = mean(sim1[,n_days] - initial_wealth)
mean2 = mean(sim2[,n_days] - initial_wealth)
mean3 = mean(sim3[,n_days] - initial_wealth)
cat("The mean profit/loss for three portfolios are", c(mean1, mean2, mean3), ".\n")

## The mean profit/loss for three portfolios are 889.2696 1148.147 -1080.145 .

# 5% value at risk:
VaR1 = quantile(sim1[,n_days] - initial_wealth, prob=0.05)
VaR2 = quantile(sim2[,n_days] - initial_wealth, prob=0.05)
VaR3 = quantile(sim3[,n_days] - initial_wealth, prob=0.05)
cat("The 5% value at risk for three portfolios are", c(-VaR1, -VaR2, -VaR3), ".\n")

## The 5% value at risk for three portfolios are 5158.832 6581.818 10500.07 .
```

Portfolio 1 consists of “Large Cap Growth Equities” and “Precious Metals” ETF which is a safe choice. Portfolio 2 consists of “Large Cap Growth Equities”, “Precious Metals”, “Sector ETF” including financial, technology and communications equities. It is more diverse. Portfolio 3 consists of “Commodities” ETF so that it is more aggressive.

From the histograms, P1 looks like normal distribution, P2 is more centralized at 0 with higher profit, while P3 has higher volatility ranging from -3600 to 2200 and induces a loss.

The VaR shows the worst-case scenario that the most you can - with a 95% level of confidence - expect to lose in dollars over the next four weeks. P1 is safe with 524.4 loss. P2’s risks are diversified so it’s VaR is not that high, 662.9. P3, the most aggressive one, is likely to have the biggest loss of 1062.0.

Market segmentation

```
rm(list=ls())
# Loading Libraries
library(ggplot2)
library(LICORS)
library(foreach)
library(mosaic)
# Read Data
market = read.csv('social_marketing.csv', header=TRUE)
summary(market)

##      X          chatter      current_events      travel
##  Length:7882      Min.   : 0.000  Min.   :0.000  Min.   : 0.000
##  Class :character  1st Qu.: 2.000  1st Qu.:1.000  1st Qu.: 0.000
##  Mode  :character  Median : 3.000  Median :1.000  Median : 1.000
##                           Mean   : 4.399  Mean   :1.526  Mean   : 1.585
##                           3rd Qu.: 6.000  3rd Qu.:2.000  3rd Qu.: 2.000
##                           Max.   :26.000  Max.   :8.000  Max.   :26.000
##  photo_sharing    uncategorized      tv_film      sports_fandom
##  Min.   : 0.000  Min.   :0.000  Min.   : 0.00  Min.   : 0.000
##  1st Qu.: 1.000  1st Qu.:0.000  1st Qu.: 0.00  1st Qu.: 0.000
##  Median : 2.000  Median :1.000  Median : 1.00  Median : 1.000
##  Mean   : 2.697  Mean   :0.813  Mean   : 1.07  Mean   : 1.594
##  3rd Qu.: 4.000  3rd Qu.:1.000  3rd Qu.: 1.00  3rd Qu.: 2.000
##  Max.   :21.000  Max.   :9.000  Max.   :17.00  Max.   :20.000
##  politics         food          family      home_and_garden
##  Min.   : 0.000  Min.   :0.000  Min.   : 0.0000  Min.   :0.0000
##  1st Qu.: 0.000  1st Qu.:0.000  1st Qu.: 0.0000  1st Qu.:0.0000
##  Median : 1.000  Median :1.000  Median : 1.0000  Median :0.0000
##  Mean   : 1.789  Mean   :1.397  Mean   : 0.8639  Mean   :0.5207
##  3rd Qu.: 2.000  3rd Qu.:2.000  3rd Qu.: 1.0000  3rd Qu.:1.0000
##  Max.   :37.000  Max.   :16.000  Max.   :10.0000  Max.   :5.0000
##  music            news          online_gaming      shopping
##  Min.   : 0.0000  Min.   : 0.000  Min.   : 0.000  Min.   : 0.000
##  1st Qu.: 0.0000  1st Qu.: 0.000  1st Qu.: 0.000  1st Qu.: 0.000
##  Median : 0.0000  Median : 0.000  Median : 0.000  Median : 1.000
##  Mean   : 0.6793  Mean   : 1.206  Mean   : 1.209  Mean   : 1.389
##  3rd Qu.: 1.0000  3rd Qu.: 1.000  3rd Qu.: 1.000  3rd Qu.: 2.000
##  Max.   :13.0000  Max.   :20.000  Max.   :27.000  Max.   :12.000
##  health_nutrition college_uni      sports_playing      cooking
##  Min.   : 0.000  Min.   : 0.000  Min.   : 0.0000  Min.   : 0.000
##  1st Qu.: 0.000  1st Qu.: 0.000  1st Qu.: 0.0000  1st Qu.: 0.000
##  Median : 1.000  Median : 1.000  Median : 0.0000  Median : 1.000
##  Mean   : 2.567  Mean   : 1.549  Mean   : 0.6392  Mean   : 1.998
##  3rd Qu.: 3.000  3rd Qu.: 2.000  3rd Qu.: 1.0000  3rd Qu.: 2.000
##  Max.   :41.000  Max.   :30.000  Max.   : 8.0000  Max.   :33.000
##  eco              computers      business      outdoors
##  Min.   : 0.0000  Min.   : 0.0000  Min.   : 0.0000  Min.   : 0.0000
##  1st Qu.: 0.0000  1st Qu.: 0.0000  1st Qu.: 0.0000  1st Qu.: 0.0000
##  Median : 0.0000  Median : 0.0000  Median : 0.0000  Median : 0.0000
##  Mean   : 0.5123  Mean   : 0.6491  Mean   : 0.4232  Mean   : 0.7827
##  3rd Qu.: 1.0000  3rd Qu.: 1.0000  3rd Qu.: 1.0000  3rd Qu.: 1.0000
##  Max.   : 6.0000  Max.   :16.0000  Max.   : 6.0000  Max.   :12.0000
```

```

##      crafts      automotive       art      religion
##  Min.   :0.0000  Min.   :0.0000  Min.   :0.0000  Min.   :0.000
##  1st Qu.:0.0000  1st Qu.:0.0000  1st Qu.:0.0000  1st Qu.:0.000
##  Median :0.0000  Median :0.0000  Median :0.0000  Median :0.000
##  Mean   :0.5159  Mean   :0.8299  Mean   :0.7248  Mean   :1.095
##  3rd Qu.:1.0000  3rd Qu.:1.0000  3rd Qu.:1.0000  3rd Qu.:1.000
##  Max.   :7.0000  Max.   :13.0000  Max.   :18.0000  Max.   :20.000
##      beauty      parenting      dating      school
##  Min.   :0.0000  Min.   :0.0000  Min.   :0.0000  Min.   :0.0000
##  1st Qu.:0.0000  1st Qu.:0.0000  1st Qu.:0.0000  1st Qu.:0.0000
##  Median :0.0000  Median :0.0000  Median :0.0000  Median :0.0000
##  Mean   :0.7052  Mean   :0.9213  Mean   :0.7109  Mean   :0.7677
##  3rd Qu.:1.0000  3rd Qu.:1.0000  3rd Qu.:1.0000  3rd Qu.:1.0000
##  Max.   :14.0000  Max.   :14.0000  Max.   :24.0000  Max.   :11.0000
##  personal_fitness      fashion      small_business      spam
##  Min.   :0.000  Min.   :0.0000  Min.   :0.0000  Min.   :0.00000
##  1st Qu.:0.000  1st Qu.:0.0000  1st Qu.:0.0000  1st Qu.:0.00000
##  Median :0.000  Median :0.0000  Median :0.0000  Median :0.00000
##  Mean   :1.462  Mean   :0.9966  Mean   :0.3363  Mean   :0.00647
##  3rd Qu.:2.000  3rd Qu.:1.0000  3rd Qu.:1.0000  3rd Qu.:0.00000
##  Max.   :19.000  Max.   :18.0000  Max.   :6.0000  Max.   :2.00000
##      adult
##  Min.   :0.0000
##  1st Qu.:0.0000
##  Median :0.0000
##  Mean   :0.4033
##  3rd Qu.:0.0000
##  Max.   :26.0000

X = market[,-(36:37)]# Given a smaller set of data from engine
X = X[,-(1)]
X = X[,-(5)]
X = scale(X, center=TRUE, scale=TRUE)

```

We considered “uncategorized”, “spam” and “adult” columns are unrelated to understand social-media audience. Given a smaller set of data can help us better understand which market segment stands out.

Choosing K

```

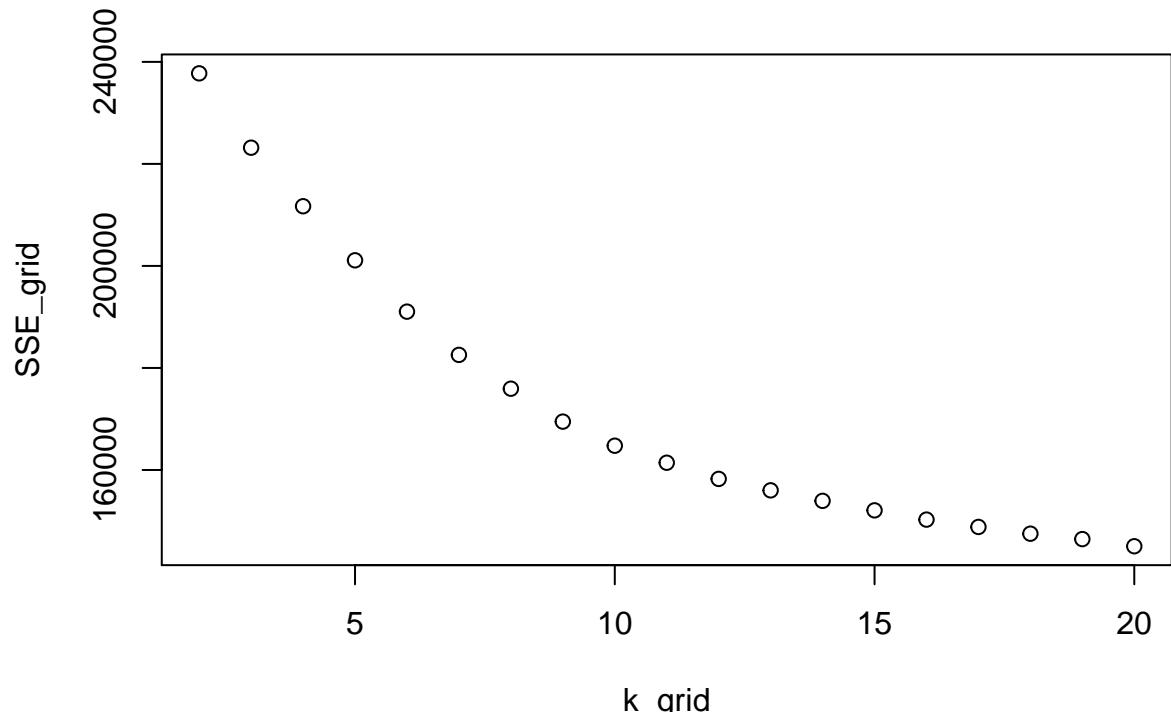
#k elbow
library(foreach)
k_grid = seq(2, 20, by=1)
SSE_grid = foreach(k = k_grid, .combine='c') %do% {
  cluster_k = kmeans(X, k, nstart=50)
  cluster_k$tot.withinss
}

## Warning: did not converge in 10 iterations

## Warning: did not converge in 10 iterations

## Warning: did not converge in 10 iterations
plot(k_grid, SSE_grid)

```

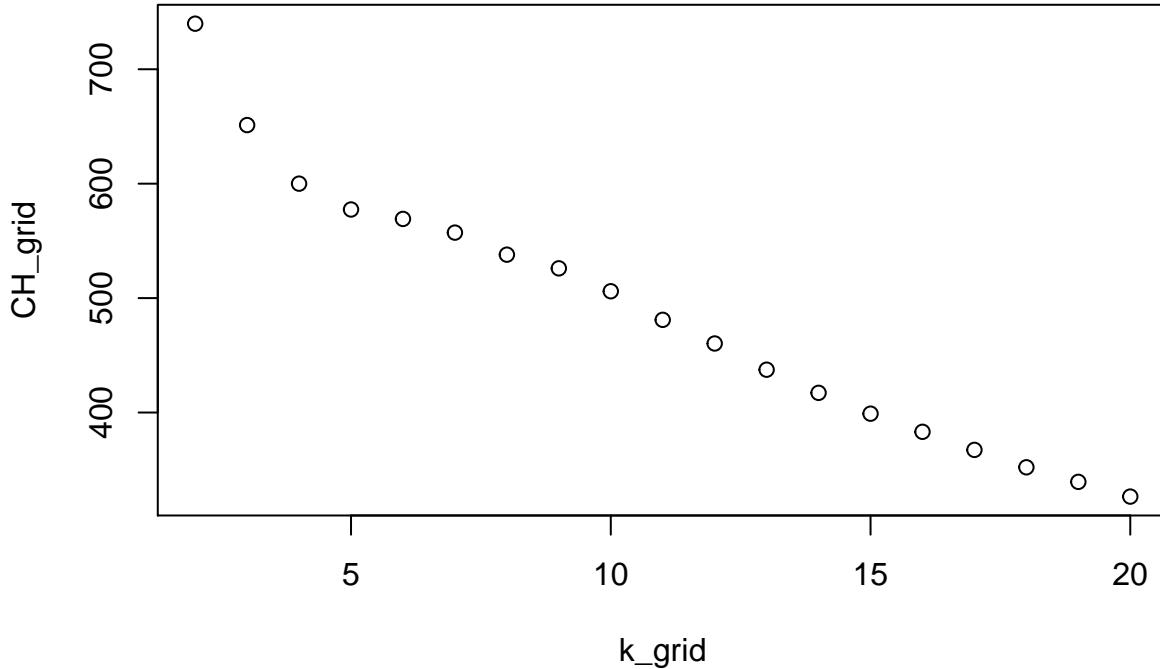


```

# CH index
N = nrow(X)
k_grid = seq(2, 20, by=1)
CH_grid = foreach(k = k_grid, .combine='c') %do% {
  cluster_k = kmeans(X, k, nstart=50)
  W = cluster_k$tot.withinss
  B = cluster_k$betweenss
  CH = (B/W)*((N-k)/(k-1))
  CH
}

## Warning: did not converge in 10 iterations
plot(k_grid, CH_grid)

```



```
# From above two plots, k = 10 prob a good estimate
```

From Elbow plot above, we can see $k = 6$, $k = 7$ and $k = 8$ are reasonable choices. From CH plot, $K = 2$ and $k = 3$ are reasonable options. For better interpretation, we choose $k = 6$.

K-mean

```

mu = attr(X,"scaled:center")
sigma = attr(X,"scaled:scale")

# Run k-means with 6 clusters and 25 starts
set.seed(123)
clust1 = kmeans(X, 6, nstart=25)
clust1$center

##          chatter current_events      travel photo_sharing      tv_film
## 1 -0.036759187  0.1209936269 -0.10437280 -2.543680e-02 -0.01151786
## 2  0.051780854  0.0001334616 -0.01791749  6.504529e-02  0.52861023
## 3  0.042358638  0.1083468800  1.76412303 -5.330673e-02  0.07308594
## 4  0.003365373  0.0220951090 -0.15152551  2.017622e-05 -0.04987401
## 5  0.146207828  0.1829744854 -0.03835790  1.273679e+00 -0.02631070
## 6 -0.024203156 -0.0637075442 -0.21244752 -1.523230e-01 -0.04901911
##          sports_fandom   politics      food      family home_and_garden      music
## 1     1.9927882 -0.2043279  1.78504021  1.44231269      0.1714444  0.05146940
## 2    -0.1179150 -0.1693443 -0.07128063  0.16687513      0.1303939  0.45038440
## 3     0.1919371  2.3646452  0.02644606  0.04403791      0.1187840 -0.04062303
## 4    -0.1963649 -0.1773279  0.41451561 -0.07257249      0.1715492  0.05109755
## 5    -0.2066655 -0.1195417 -0.19385574  0.04962556      0.1419075  0.51486859
## 6    -0.2880522 -0.2559597 -0.35352136 -0.25770907     -0.1108338 -0.12148827
##          news online_gaming      shopping health_nutrition college_uni
## 1   -0.08159390 -0.07379875  0.050278899      -0.1606037 -0.12080984
## 2   -0.19744222  2.98759449  0.012453295      -0.1878887  3.03391741
## 3   1.95236322 -0.13156157 -0.002689702      -0.1999743 -0.07662500

```

```

## 4 -0.04991139 -0.13242557 0.046777738      2.1024950 -0.20645167
## 5 -0.06655253 -0.05853862 0.361147731      -0.0570282 -0.02719465
## 6 -0.24300163 -0.23376487 -0.063242393      -0.3267993 -0.22825051
##   sports_playing   cooking       eco   computers   business   outdoors
## 1    0.1035139 -0.1131179  0.19371961  0.06943665  0.11654625 -0.08289053
## 2    1.9752619 -0.1536056 -0.03315780 -0.06663194  0.04087215 -0.08984051
## 3   -0.0107870 -0.2155874  0.11126923  1.55443402  0.35791064  0.11199768
## 4   -0.0232308  0.3692431  0.52778016 -0.07651877  0.06184549  1.62284700
## 5    0.1768755  2.6125593  0.09362167  0.07314619  0.27119483  0.03430138
## 6   -0.2309400 -0.3294129 -0.16051500 -0.23361222 -0.12338019 -0.31456773
##   crafts   automotive       art   religion   beauty   parenting
## 1  0.69551606  0.16199936  0.093168053  2.17551882  0.2991267  2.07234128
## 2  0.09923196  0.04875761  0.282408498 -0.12919669 -0.1893260 -0.16176258
## 3  0.15419517  1.10372413 -0.001591712 -0.03302827 -0.1732090  0.01717657
## 4  0.09275910 -0.12387506  0.012677581 -0.17506847 -0.2115688 -0.10037822
## 5  0.14910555  0.06212852  0.120909526 -0.12588879  2.4237260 -0.07350937
## 6 -0.18664818 -0.18213883 -0.061168209 -0.29787493 -0.2648371 -0.30591235
##   dating     school personal_fitness   fashion small_business
## 1  0.04515305  1.63345074      -0.11572149  0.01622842  0.10553941
## 2  0.01516275 -0.20489594      -0.19485481 -0.05474624  0.25407575
## 3  0.20077643 -0.03458031      -0.18846051 -0.17963443  0.23401916
## 4  0.18443804 -0.14055841      2.07857192 -0.10949083 -0.06829819
## 5  0.14030009  0.19400249      -0.03924437  2.50528281  0.24608838
## 6 -0.09275717 -0.24542085      -0.33292440 -0.25982925 -0.09570291

```

Z-Score scale cluster is not helpful to interpret our data. We return to our unscale version to look at each group of clusters.

```
clust1$center[1,]*sigma + mu
```

```

##      chatter   current_events      travel photo_sharing
## 4.2690289      1.6797900      1.3464567      2.6272966
##      tv_film   sports_fandom      politics      food
## 1.0511811      5.9002625      1.1692913      4.5669291
##      family   home_and_garden      music      news
## 2.4973753      0.6469816      0.7322835      1.0341207
##      online_gaming      shopping health_nutrition college_uni
## 1.0104987      1.4803150      1.8451444      1.1994751
##      sports_playing      cooking      eco   computers
## 0.7401575      1.6102362      0.6614173      0.7309711
##      business      outdoors      crafts   automotive
## 0.5039370      0.6824147      1.0839895      1.0511811
##      art      religion      beauty   parenting
## 0.8766404      5.2611549      1.1023622      4.0616798
##      dating     school personal_fitness      fashion
## 0.7913386      2.7086614      1.1837270      1.0262467
##      small_business
## 0.4015748

```

In cluster1, this group actively talks about every topics. All the topics are in the average rank of overall market. They are especially interested in religion, parenting, sport_fandom, food, photo_sharing and family. We consider this cluster as “Family-oriented”.

```
clust1$center[2,]*sigma + mu
```

```

##      chatter   current_events      travel photo_sharing

```

```

##      4.5814978      1.5264317      1.5440529      2.8744493
##      tv_film    sports_fandom      politics          food
##      1.9471366      1.3392070      1.2753304      1.2709251
##      family   home_and_garden      music            news
##      1.0528634      0.6167401      1.1431718      0.7907489
##      online_gaming      shopping  health_nutrition college_uni
##      9.2378855      1.4118943      1.7224670      10.3392070
##      sports_playing      cooking           eco      computers
##      2.5660793      1.4713656      0.4867841      0.5704846
##      business      outdoors         crafts      automotive
##      0.4515419      0.6740088      0.5969163      0.8964758
##      art        religion         beauty      parenting
##      1.1850220      0.8480176      0.4537445      0.6762115
##      dating      school  personal_fitness      fashion
##      0.7378855      0.5242291      0.9933921      0.8964758
##      small_business      0.4933921

```

In cluster 2, we categorized this group as “College Students”. This group tends to focus on topics about college_uni, online_gaming.

```
clust1$center[3,]*sigma + mu
```

```

##      chatter  current_events      travel  photo_sharing
##      4.5482456      1.6637427      5.6169591      2.5511696
##      tv_film    sports_fandom      politics          food
##      1.1915205      2.0087719      8.9561404      1.4444444
##      family   home_and_garden      music            news
##      0.9137427      0.6081871      0.6374269      5.3070175
##      online_gaming      shopping  health_nutrition college_uni
##      0.8552632      1.3845029      1.6681287      1.3274854
##      sports_playing      cooking           eco      computers
##      0.6286550      1.2587719      0.5979532      2.4824561
##      business      outdoors         crafts      automotive
##      0.6710526      0.9181287      0.6418129      2.3377193
##      art        religion         beauty      parenting
##      0.7222222      1.0321637      0.4751462      0.9473684
##      dating      school  personal_fitness      fashion
##      1.0687135      0.7266082      1.0087719      0.6681287
##      small_business      0.4809942

```

In cluster 3, we can see this group is interested in politics, news, sports_fandom and current_events. We categorized this group as “Politician”.

```
clust1$center[4,]*sigma + mu
```

```

##      chatter  current_events      travel  photo_sharing
##      4.4106335      1.5542986      1.2386878      2.6968326
##      tv_film    sports_fandom      politics          food
##      0.9875566      1.1696833      1.2511312      2.1334842
##      family   home_and_garden      music            news
##      0.7816742      0.6470588      0.7319005      1.1006787
##      online_gaming      shopping  health_nutrition college_uni
##      0.8529412      1.4739819      12.0203620      0.9513575
##      sports_playing      cooking           eco      computers

```

```

##      0.6165158    3.2647059    0.9185520    0.5588235
##      business     outdoors      crafts      automotive
##      0.4660633    2.7454751    0.5916290    0.6606335
##      art          religion     beauty      parenting
##      0.7454751    0.7601810    0.4242081    0.7692308
##      dating        school     personal_fitness   fashion
##      1.0395928    0.6006787    6.4615385    0.7963801
##      small_business
##      0.2941176

```

In cluster 4, this group is considered as “Health & Fitness”. These people enjoy talking about health_nutrition, personal fitness, cooking, and outdoors.

```
clust1$center[5,]*sigma + mu
```

```

##      chatter   current_events      travel   photo_sharing
##      4.9147425    1.7584369    1.4973357    6.1758437
##      tv_film    sports_fandom      politics      food
##      1.0266430    1.1474245    1.4262877    1.0532860
##      family    home_and_garden      music      news
##      0.9200710    0.6252220    1.2095915    1.0657194
##      online_gaming
##      shopping   health_nutrition college_uni
##      1.0515098    2.0426288    2.3108348    1.4706927
##      sports_playing
##      cooking      eco      computers
##      0.8117229    10.9591474    0.5843694    0.7353464
##      business     outdoors      crafts      automotive
##      0.6110124    0.8241563    0.6376554    0.9147425
##      art          religion     beauty      parenting
##      0.9218472    0.8543517    3.9236234    0.8099467
##      dating        school     personal_fitness   fashion
##      0.9609236    0.9982238    1.3676732    5.5772647
##      small_business
##      0.4884547

```

In cluster 5, we can see this group of people centers in cooking, photo_sharing, fashion, beauty, health_nutrition and shopping. We consider this group of people might be “Teenage Girls”.

```
clust1$center[6,]*sigma + mu
```

```

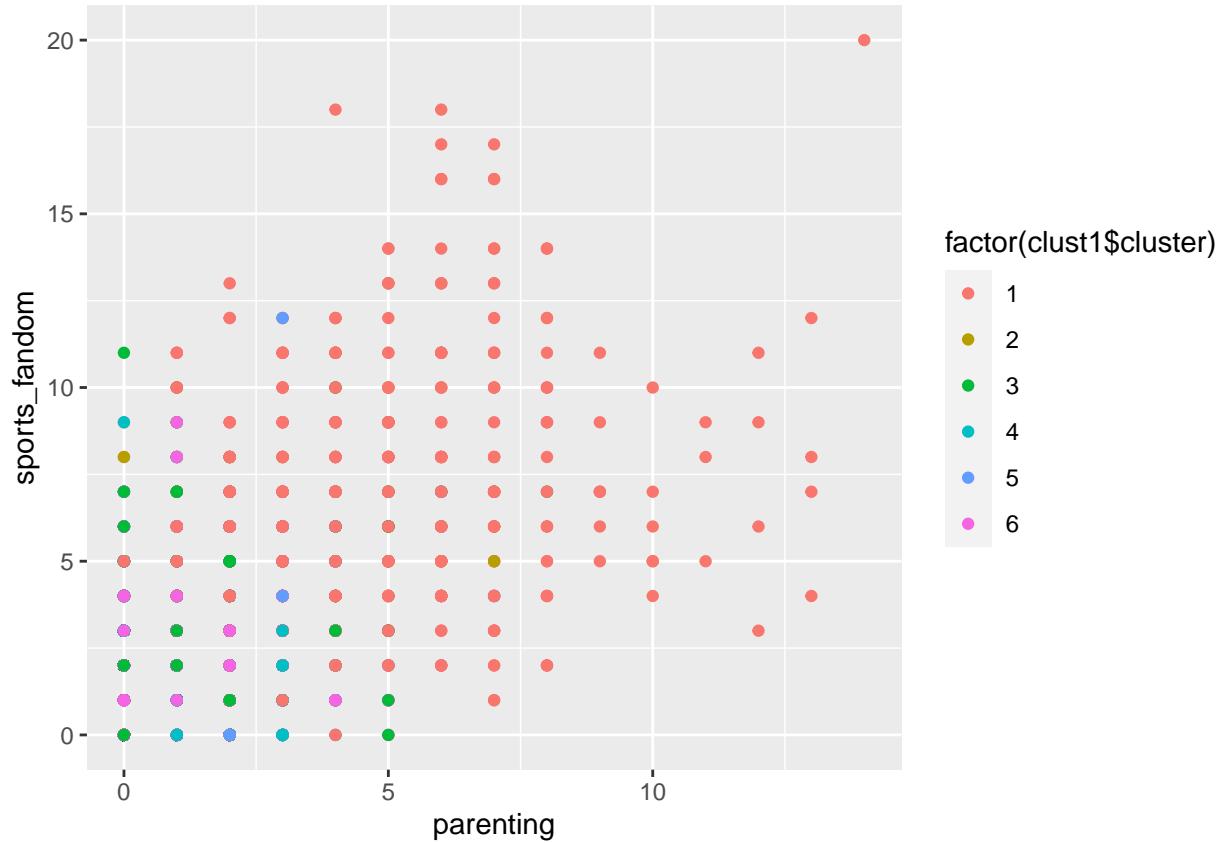
##      chatter   current_events      travel   photo_sharing
##      4.3133407    1.4454245    1.0994487    2.2807056
##      tv_film    sports_fandom      politics      food
##      0.9889746    0.9715546    1.0127894    0.7697905
##      family    home_and_garden      music      news
##      0.5719956    0.4390298    0.5541345    0.6950386
##      online_gaming
##      shopping   health_nutrition college_uni
##      0.5805954    1.2749724    1.0979052    0.8882029
##      sports_playing
##      cooking      eco      computers
##      0.4138920    0.8683572    0.3887541    0.3735391
##      business     outdoors      crafts      automotive
##      0.3378170    0.4022051    0.3633958    0.5810364
##      art          religion     beauty      parenting
##      0.6251378    0.5250276    0.3534730    0.4577729
##      dating        school     personal_fitness   fashion
##      0.5455347    0.4760750    0.6613010    0.5214994
##      small_business

```

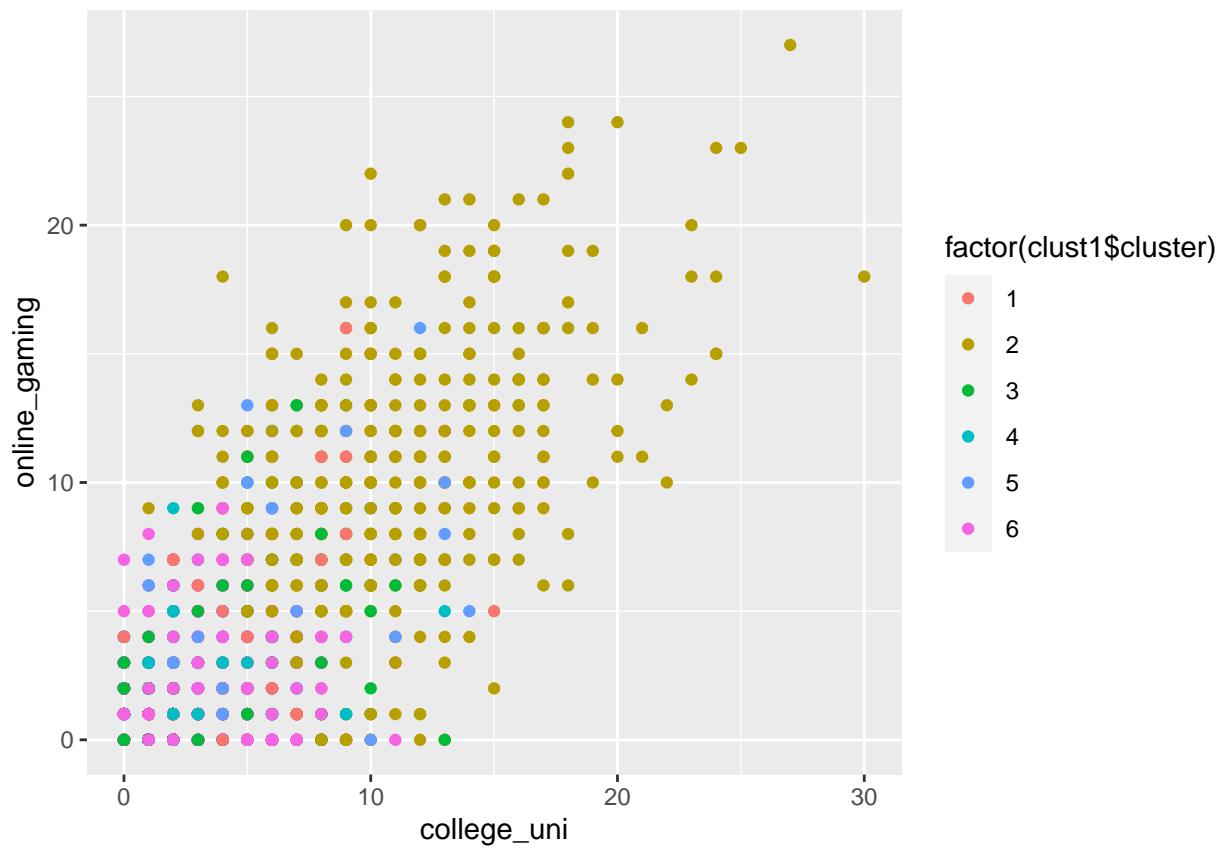
```
##          0.2771775
```

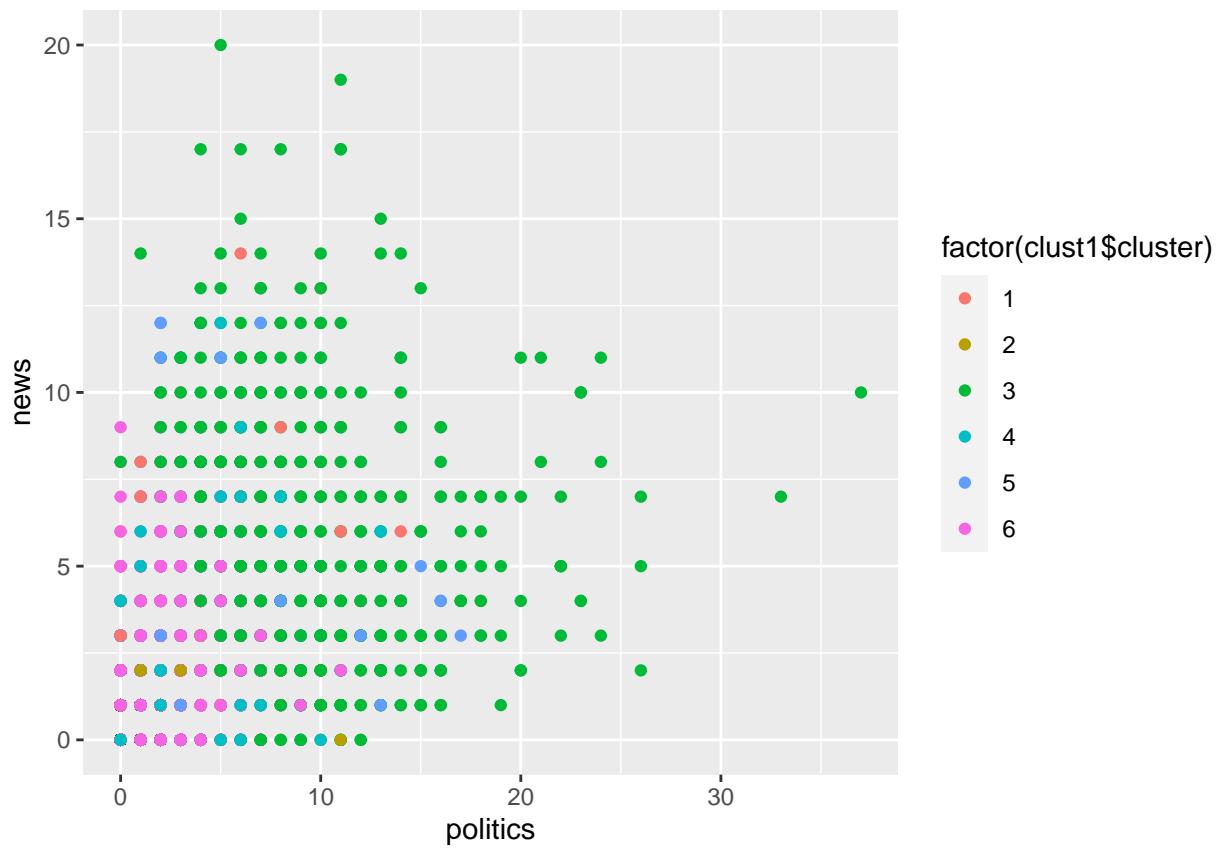
In cluster 6, we don't see this group of people are especially interested in any topics. We consider this group as "Outliers".

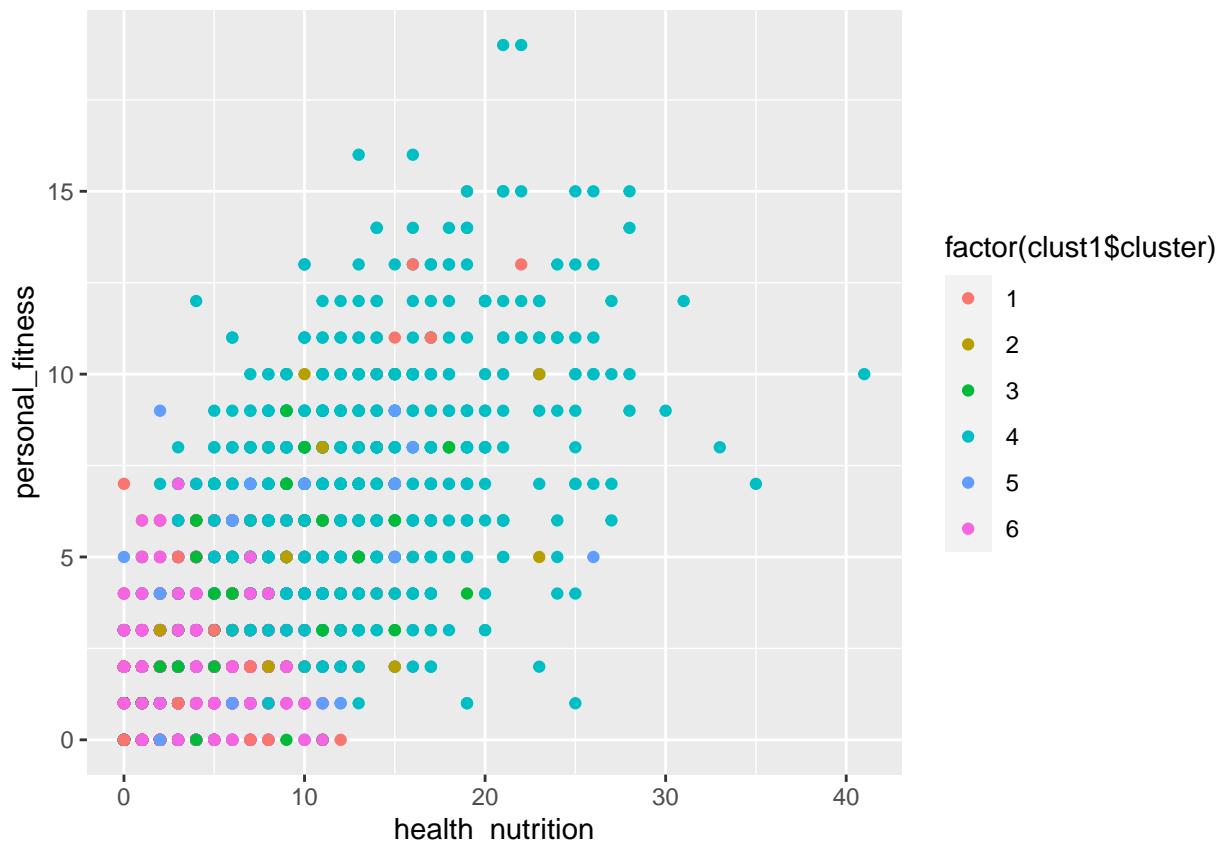
```
qplot(parenting, sports_fandom, data=market, color=factor(clust1$cluster))
```

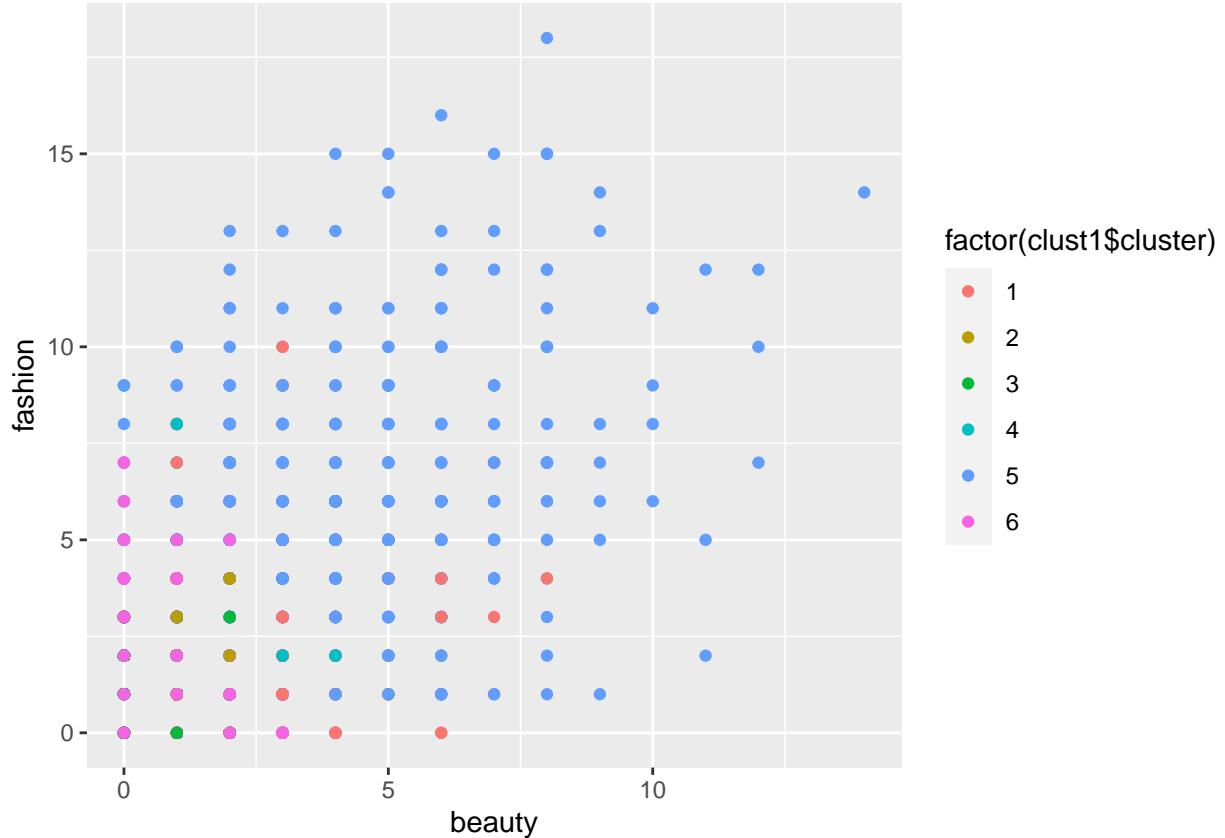


```
qplot(college_uni, online_gaming, data=market, color=factor(clust1$cluster))
```









To confirm our observation, we plot each cluster based on the most important features. To better prove our theories, we use kmeans++ as a different initialization strategy.

K-means++

```
# Using kmeans++ initialization
clust2 = kmeanspp(X, k=6, nstart=25)

set.seed(123)
clust2$center[1,]*sigma + mu

##          chatter   current_events      travel photo_sharing
## 4.3133407     1.4454245 1.0994487    2.2807056
##      tv_film   sports_fandom politics      food
## 0.9889746     0.9715546 1.0127894    0.7697905
##      family home_and_garden music      news
## 0.5719956     0.4390298 0.5541345    0.6950386
##  online_gaming shopping health_nutrition college_uni
## 0.5805954     1.2749724 1.0979052    0.8882029
## sports_playing cooking eco computers
## 0.4138920     0.8683572 0.3887541    0.3735391
## business outdoors crafts automotive
## 0.3378170     0.4022051 0.3633958    0.5810364
##      art religion beauty parenting
## 0.6251378     0.5250276 0.3534730    0.4577729
##      dating school personal_fitness fashion
## 0.5455347     0.4760750 0.6613010    0.5214994
```

```
##   small_business
##   0.2771775
```

This is our “Outliers” group. They tend to not show particular interest in any topic.

```
clust2$center[2,]*sigma + mu
```

	chatter	current_events	travel	photo_sharing
##	4.5814978	1.5264317	1.5440529	2.8744493
##	tv_film	sports_fandom	politics	food
##	1.9471366	1.3392070	1.2753304	1.2709251
##	family	home_and_garden	music	news
##	1.0528634	0.6167401	1.1431718	0.7907489
##	online_gaming	shopping	health_nutrition	college_uni
##	9.2378855	1.4118943	1.7224670	10.3392070
##	sports_playing	cooking	eco	computers
##	2.5660793	1.4713656	0.4867841	0.5704846
##	business	outdoors	crafts	automotive
##	0.4515419	0.6740088	0.5969163	0.8964758
##	art	religion	beauty	parenting
##	1.1850220	0.8480176	0.4537445	0.6762115
##	dating	school	personal_fitness	fashion
##	0.7378855	0.5242291	0.9933921	0.8964758
##	small_business			
##	0.4933921			

This cluster falls into “College Students”. They are interested in college_uni and online_gaming topics.

```
clust2$center[3,]*sigma + mu
```

	chatter	current_events	travel	photo_sharing
##	4.4106335	1.5542986	1.2386878	2.6968326
##	tv_film	sports_fandom	politics	food
##	0.9875566	1.1696833	1.2511312	2.1334842
##	family	home_and_garden	music	news
##	0.7816742	0.6470588	0.7319005	1.1006787
##	online_gaming	shopping	health_nutrition	college_uni
##	0.8529412	1.4739819	12.0203620	0.9513575
##	sports_playing	cooking	eco	computers
##	0.6165158	3.2647059	0.9185520	0.5588235
##	business	outdoors	crafts	automotive
##	0.4660633	2.7454751	0.5916290	0.6606335
##	art	religion	beauty	parenting
##	0.7454751	0.7601810	0.4242081	0.7692308
##	dating	school	personal_fitness	fashion
##	1.0395928	0.6006787	6.4615385	0.7963801
##	small_business			
##	0.2941176			

This cluster falls into “Health & Fitness”, who care about health_nutrition, personal_fitness and cooking.

```
clust2$center[4,]*sigma + mu
```

	chatter	current_events	travel	photo_sharing
##	4.9147425	1.7584369	1.4973357	6.1758437
##	tv_film	sports_fandom	politics	food
##	1.0266430	1.1474245	1.4262877	1.0532860
##	family	home_and_garden	music	news

```

##      0.9200710      0.6252220      1.2095915      1.0657194
## online_gaming      shopping health_nutrition college_uni
##      1.0515098      2.0426288      2.3108348      1.4706927
## sports_playing      cooking      eco      computers
##      0.8117229      10.9591474      0.5843694      0.7353464
## business      outdoors      crafts      automotive
##      0.6110124      0.8241563      0.6376554      0.9147425
##      art      religion      beauty      parenting
##      0.9218472      0.8543517      3.9236234      0.8099467
##      dating      school personal_fitness      fashion
##      0.9609236      0.9982238      1.3676732      5.5772647
## small_business      0.4884547

```

This cluster falls into cluster 5 - “Teenage Girls”, who enjoy topics like cooking, fashion, beauty and photo_sharing.

```
clust2$center[5,]*sigma + mu
```

```

##      chatter      current_events      travel      photo_sharing
##      4.2690289      1.6797900      1.3464567      2.6272966
##      tv_film      sports_fandom      politics      food
##      1.0511811      5.9002625      1.1692913      4.5669291
##      family      home_and_garden      music      news
##      2.4973753      0.6469816      0.7322835      1.0341207
## online_gaming      shopping health_nutrition college_uni
##      1.0104987      1.4803150      1.8451444      1.1994751
## sports_playing      cooking      eco      computers
##      0.7401575      1.6102362      0.6614173      0.7309711
## business      outdoors      crafts      automotive
##      0.5039370      0.6824147      1.0839895      1.0511811
##      art      religion      beauty      parenting
##      0.8766404      5.2611549      1.1023622      4.0616798
##      dating      school personal_fitness      fashion
##      0.7913386      2.7086614      1.1837270      1.0262467
## small_business      0.4015748

```

We can see this cluster falls into cluster 1 - “Family-Oriented”, who is actively talking about religion, sport_fandom, parenting and food.

```
clust2$center[6,]*sigma + mu
```

```

##      chatter      current_events      travel      photo_sharing
##      4.5482456      1.6637427      5.6169591      2.5511696
##      tv_film      sports_fandom      politics      food
##      1.1915205      2.0087719      8.9561404      1.4444444
##      family      home_and_garden      music      news
##      0.9137427      0.6081871      0.6374269      5.3070175
## online_gaming      shopping health_nutrition college_uni
##      0.8552632      1.3845029      1.6681287      1.3274854
## sports_playing      cooking      eco      computers
##      0.6286550      1.2587719      0.5979532      2.4824561
## business      outdoors      crafts      automotive
##      0.6710526      0.9181287      0.6418129      2.3377193
##      art      religion      beauty      parenting

```

```

##      0.7222222    1.0321637    0.4751462    0.9473684
##      dating        school personal_fitness   fashion
##      1.0687135    0.7266082    1.0087719    0.6681287
##  small_business
##      0.4809942

```

This cluster falls into cluster 3 - “Politician”, who care about politics and news.

Conclusion

From our K-means and K-means++ method, we can conclude that our grouping method works very well in identifying distinct market segments. Considering “NutrientH20” could be a nutrient brand, we recommend “Health & Fitness” segment could be the target audience. This group shares the same interest in health_nutrition, personal_fitness and cooking. “NutrientH20” can focus on its marketing campaign in these related topics.

Author attribution

Pre-processing

In the pre-processing stage, we make everything lowercase, remove numbers, remove punctuation, remove excess white-space, remove stop words. Then we convert the corpus to Document Term Matrix, and remove Sparse terms.

We apply this process function on training and testing data sets. And convert them to TF-IDF weights of each terms. In order to deal with words in the test set that we never saw in the training set, we filter their common terms and just dig into them.

```

rm(list=ls())
library(tm)

## Loading required package: NLP
##
## Attaching package: 'NLP'
##
## The following object is masked from 'package:ggplot2':
## 
##     annotate
##
## Attaching package: 'tm'
##
## The following object is masked from 'package:mosaic':
## 
##     inspect
set.seed(1)

readerPlain = function(fname){
  readPlain(elem=list(content=readLines(fname)), id=fname, language='en')
}

# extract all author labels
authors = Sys.glob('../data/ReutersC50/C50train/*')
file_list= NULL
labels = NULL
# append all txt into one list

```

```

for(author in authors) {
  author_name = substring(author, first=29)
  files_to_add = Sys.glob(paste0(author, '/*.txt'))
  file_list = append(file_list, files_to_add)
  labels = append(labels, rep(author_name, length(files_to_add)))
}

all_docs = lapply(file_list, readerPlain)
names(all_docs) = file_list
names(all_docs) = sub('.txt', '', names(all_docs))

# main pre-process function
process = function(x){
  file_list= NULL
  labels = NULL
  # append all txt into one list
  for(author in x) {
    author_name = substring(author, first=29)
    files_to_add = Sys.glob(paste0(author, '/*.txt'))
    file_list = append(file_list, files_to_add)
    labels = append(labels, rep(author_name, length(files_to_add)))
  }

  all_docs = lapply(file_list, readerPlain)
  names(all_docs) = file_list
  names(all_docs) = sub('.txt', '', names(all_docs))
  my_corpus = Corpus(VectorSource(all_docs))

  # Pre-processing
  my_corpus = tm_map(my_corpus, content_transformer(tolower)) # make everything lowercase
  my_corpus = tm_map(my_corpus, content_transformer(removeNumbers)) # remove numbers
  my_corpus = tm_map(my_corpus, content_transformer(removePunctuation)) # remove punctuation
  my_corpus = tm_map(my_corpus, content_transformer(stripWhitespace)) ## remove excess white-space
  my_corpus = tm_map(my_corpus, content_transformer(removeWords), stopwords("SMART"))

  DTM = DocumentTermMatrix(my_corpus)
  DTM = removeSparseTerms(DTM, 0.975)

  return(DTM)
}

train = process(Sys.glob('../data/ReutersC50/C50train/*'))
train_tfidf = weightTfIdf(train)
X_train = as.data.frame(as.matrix(train_tfidf))
X_train = cbind(X_train, labels)

test = process(Sys.glob('../data/ReutersC50/C50test/*'))
test_tfidf = weightTfIdf(test)
X_test = as.data.frame(as.matrix(test_tfidf))
X_test = cbind(X_test, labels)

# We just care about common terms in both train and test datasets
common=intersect(names(X_train),names(X_test))

```

```

X_train=X_train[,common]
X_test=X_test[,common]

# add "_c" to avoid column name error during model building
colnames(X_train) <- paste(colnames(X_train), "_c", sep = "")
colnames(X_test) <- paste(colnames(X_test), "_c", sep = "")

# change labels to factor
X_train$labels_c = factor(X_train$labels_c)
X_test$labels_c = factor(X_test$labels_c)

```

After all data processing steps, we build two models.

Model 1: Random Forest

```

library(randomForest)

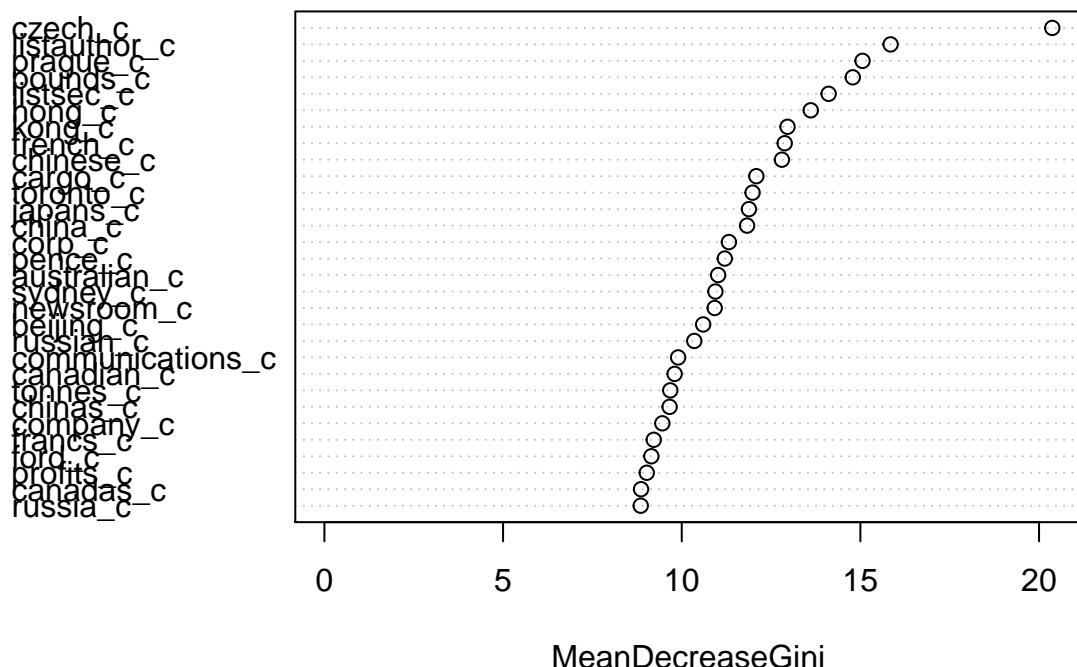
## randomForest 4.6-14
## Type rfNews() to see new features/changes/bug fixes.

##
## Attaching package: 'randomForest'
## The following object is masked from 'package:dplyr':
##       combine
## The following object is masked from 'package:ggplot2':
##       margin
set.seed(1)
for(i in c(100,500,1000)){
  rf_model = randomForest(labels_c~, data = X_train, ntree = i)
  varImpPlot(rf_model)

  # predict using X_test
  result = as.data.frame(table(predict(rf_model, X_test, type = "response")), labels)
  # compute the accuracy
  result$correct = ifelse(result$Var1==result$labels, 1, 0)
  result$correct_num = result$Freq * result$correct
  accuracy = sum(result$correct_num)/sum(result$Freq) * 100
  cat("ntree =", i , ", Accuracy is", accuracy,"%.\n")
}

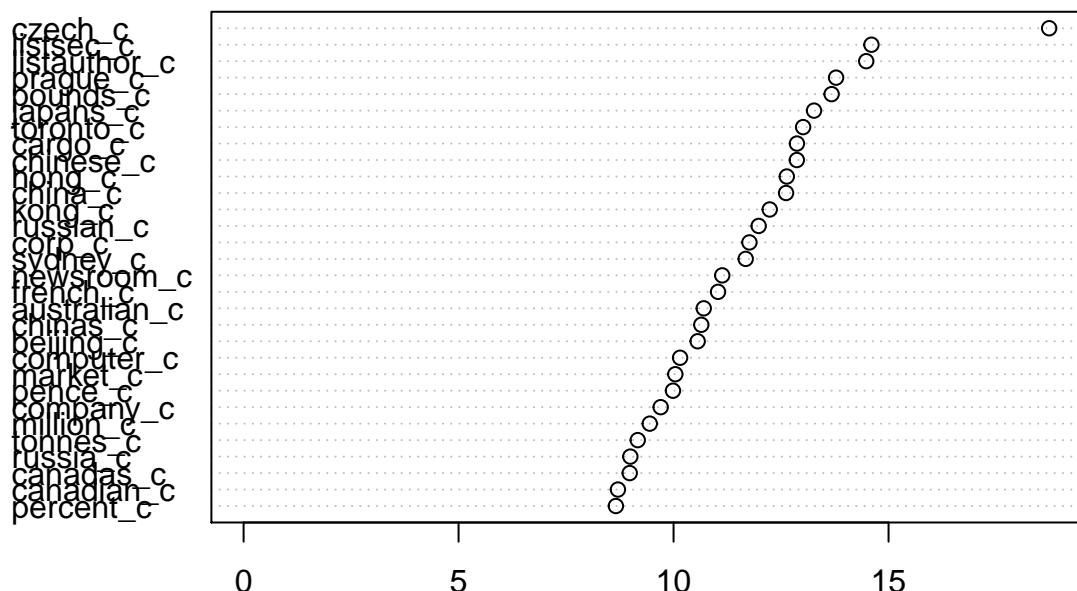
```

rf_model



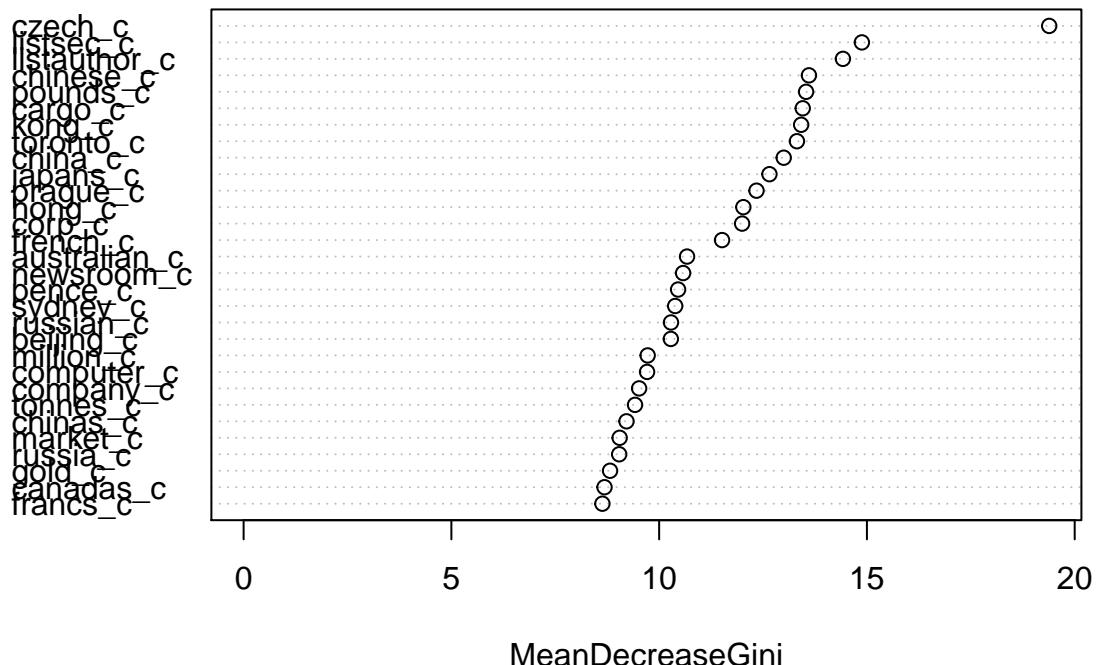
ntree = 100 , Accuracy is 58.2 %.

rf_model



ntree = 500 , Accuracy is 61.48 %.

rf_model



```
## ntree = 1000 , Accuracy is 61.84 %.
```

Model 2: Naive Bayes

```
library(tm)
library(e1071)
#library(naivebayes)
NB=naiveBayes(labels_c~, data=X_train)

# predict using X_test
result = as.data.frame(table(predict(NB, X_test, type = "class"),labels))
# compute the accuracy
result$correct = ifelse(result$Var1==result$labels, 1, 0)
result$correct_num = result$Freq * result$correct
accuracy = sum(result$correct_num)/sum(result$Freq) * 100
cat("Accuracy is", accuracy,"%. ")
```

```
## Accuracy is 40.96 %.
```

Conclusion

Random Forest model performs better than Naive Bayes. The best accuracy of random forest models is 62.04% when ntree = 1000

Association rule mining

```
rm(list=ls())
library(arules)
```

```

##
## Attaching package: 'arules'
## The following object is masked from 'package:tm':
##
##     inspect
## The following objects are masked from 'package:mosaic':
##
##     inspect, lhs, rhs
## The following object is masked from 'package:dplyr':
##
##     recode
## The following objects are masked from 'package:base':
##
##     abbreviate, write
library(arulesViz)

## Loading required package: grid
## Registered S3 method overwritten by 'seriation':
##   method      from
##   reorder.hclust gclus
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.0 --
## v tibble  3.0.3    v purrr   0.3.4
## v tidyr   1.1.1    v stringr  1.4.0
## v readr   1.3.1    v forcats 0.5.0

## -- Conflicts ----- tidyverse_conflicts() --
## x purrr::accumulate()      masks foreach::accumulate()
## x NLP::annotate()         masks ggplot2::annotate()
## x randomForest::combine() masks dplyr::combine()
## x mosaic::count()         masks dplyr::count()
## x purrr::cross()          masks mosaic::cross()
## x mosaic::do()            masks dplyr::do()
## x tidyr::expand()          masks Matrix::expand()
## x dplyr::filter()          masks stats::filter()
## x xts::first()             masks dplyr::first()
## x ggstance::geom_errorbarh() masks ggplot2::geom_errorbarh()
## x dplyr::lag()              masks stats::lag()
## x xts::last()               masks dplyr::last()
## x randomForest::margin()    masks ggplot2::margin()
## x tidyr::pack()              masks Matrix::pack()
## x arules::recode()           masks dplyr::recode()
## x mosaic::stat()             masks ggplot2::stat()
## x mosaic::tally()             masks dplyr::tally()
## x tidyr::unpack()             masks Matrix::unpack()
## x purrr::when()               masks foreach::when()

#read in groceries.txt as transaction
groceries = read.transactions("groceries.txt", sep = ",")

```

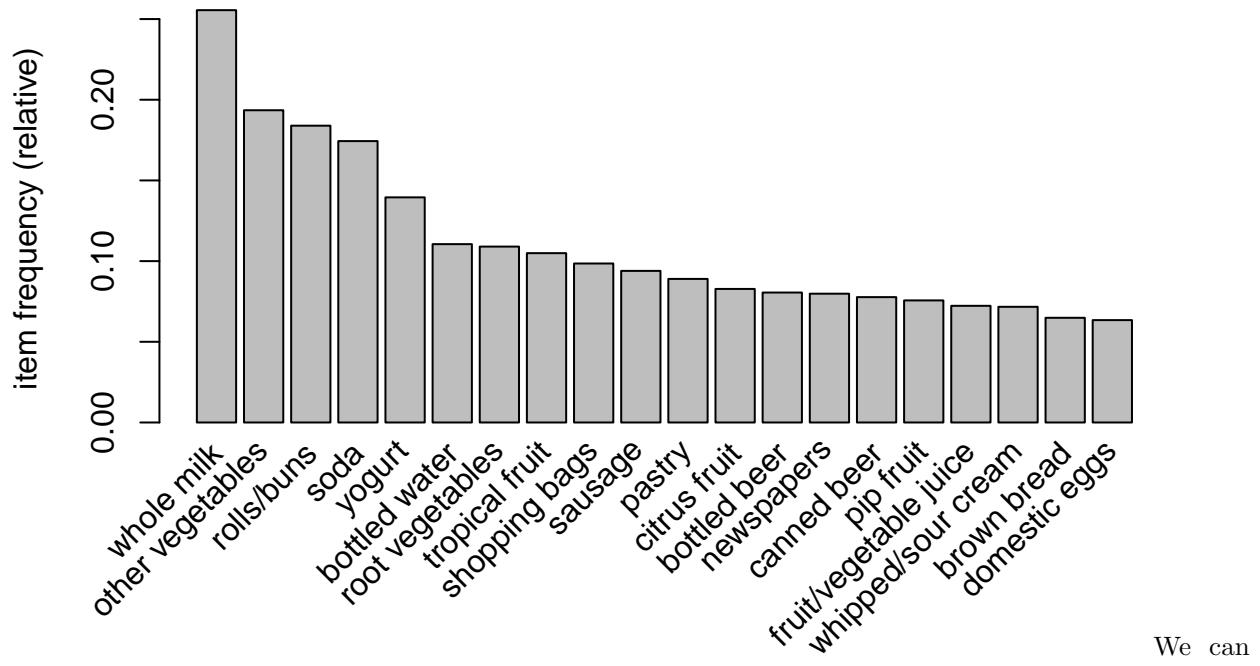
```

#summary of our transaction
summary(groceries)

## transactions as itemMatrix in sparse format with
## 9835 rows (elements/itemsets/transactions) and
## 169 columns (items) and a density of 0.02609146
##
## most frequent items:
##      whole milk other vegetables      rolls/buns      soda
##      2513          1903          1809          1715
##      yogurt      (Other)
##      1372          34055
##
## element (itemset/transaction) length distribution:
## sizes
##   1   2   3   4   5   6   7   8   9   10  11  12  13  14  15  16
## 2159 1643 1299 1005 855 645 545 438 350 246 182 117 78 77 55 46
##   17  18  19  20  21  22  23  24  26  27  28  29  32
##   29  14  14   9  11   4   6   1   1   1   1   3   1
##
##      Min. 1st Qu. Median      Mean 3rd Qu.      Max.
##      1.000  2.000  3.000  4.409  6.000  32.000
##
## includes extended item information - examples:
##      labels
## 1 abrasive cleaner
## 2 artif. sweetener
## 3 baby cosmetics

#plot a top 20 groceries item
itemFrequencyPlot(groceries,topN=20)

```



We can see 10 most frequent groceries are whole milk, other vegetables, rolls/buns, soda, yogurt, bottled water, root vegetables, tropical fruit shopping bags and sausage.

```

# Look at rules with support > .005 & confidence > .1 & length (# artists) <= 5
groceries_rule = apriori(groceries,
    parameter=list(support=.005, confidence=.1, maxlen=5))

## Apriori
##
## Parameter specification:
##   confidence minval smax arem aval originalSupport maxtime support minlen
##       0.1      0.1     1 none FALSE             TRUE      5  0.005      1
##   maxlen target ext
##       5   rules TRUE
##
## Algorithmic control:
##   filter tree heap memopt load sort verbose
##       0.1 TRUE TRUE FALSE TRUE     2     TRUE
##
## Absolute minimum support count: 49
##
## set item appearances ... [0 item(s)] done [0.00s].
## set transactions ... [169 item(s), 9835 transaction(s)] done [0.01s].
## sorting and recoding items ... [120 item(s)] done [0.00s].
## creating transaction tree ... done [0.01s].
## checking subsets of size 1 2 3 4 done [0.01s].
## writing ... [1582 rule(s)] done [0.00s].
## creating S4 object ... done [0.01s].
# look at output
inspect(groceries_rule)

```

##	lhs	rhs	support	confidence	coverage
## [1]	{}	=> {bottled water}	0.110523640	0.1105236	1.0000000000 1
## [2]	{}	=> {tropical fruit}	0.104931368	0.1049314	1.0000000000 1
## [3]	{}	=> {root vegetables}	0.108998475	0.1089985	1.0000000000 1
## [4]	{}	=> {soda}	0.174377224	0.1743772	1.0000000000 1
## [5]	{}	=> {yogurt}	0.139501779	0.1395018	1.0000000000 1
## [6]	{}	=> {rolls/buns}	0.183934926	0.1839349	1.0000000000 1
## [7]	{}	=> {other vegetables}	0.193492628	0.1934926	1.0000000000 1
## [8]	{}	=> {whole milk}	0.255516014	0.2555160	1.0000000000 1
## [9]	{cake bar}	=> {whole milk}	0.005592272	0.4230769	0.013218099 1
## [10]	{dishes}	=> {other vegetables}	0.005998983	0.3410405	0.017590239 1
## [11]	{dishes}	=> {whole milk}	0.005287239	0.3005780	0.017590239 1
## [12]	{mustard}	=> {whole milk}	0.005185562	0.4322034	0.011997966 1
## [13]	{pot plants}	=> {whole milk}	0.006914082	0.4000000	0.017285206 1
## [14]	{chewing gum}	=> {soda}	0.005388917	0.2560386	0.021047280 1
## [15]	{chewing gum}	=> {whole milk}	0.005083884	0.2415459	0.021047280 1
## [16]	{canned fish}	=> {other vegetables}	0.005083884	0.3378378	0.015048297 1
## [17]	{pasta}	=> {whole milk}	0.006100661	0.4054054	0.015048297 1
## [18]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429 3
## [19]	{herbs}	=> {other vegetables}	0.007727504	0.4750000	0.016268429 1
## [20]	{herbs}	=> {whole milk}	0.007727504	0.4750000	0.016268429 1
## [21]	{processed cheese}	=> {soda}	0.005287239	0.3190184	0.016573462 1
## [22]	{processed cheese}	=> {other vegetables}	0.005490595	0.3312883	0.016573462 1
## [23]	{processed cheese}	=> {whole milk}	0.007015760	0.4233129	0.016573462 1
## [24]	{semi-finished bread}	=> {other vegetables}	0.005185562	0.2931034	0.017691917 1

```

## [25] {semi-finished bread}      => {whole milk}          0.007117438 0.4022989 0.017691917 1
## [26] {beverages}              => {yogurt}             0.005490595 0.2109375 0.026029487 1
## [27] {beverages}              => {rolls/buns}        0.005388917 0.2070312 0.026029487 1
## [28] {beverages}              => {other vegetables} 0.005185562 0.1992188 0.026029487 1
## [29] {beverages}              => {whole milk}          0.006812405 0.2617188 0.026029487 1
## [30] {ice cream}              => {soda}               0.006100661 0.2439024 0.025012710 1
## [31] {ice cream}              => {other vegetables} 0.005083884 0.2032520 0.025012710 1
## [32] {ice cream}              => {whole milk}          0.005897306 0.2357724 0.025012710 0
## [33] {detergent}              => {other vegetables} 0.006405694 0.3333333 0.019217082 1
## [34] {detergent}              => {whole milk}          0.008947636 0.4656085 0.019217082 1
## [35] {pickled vegetables}    => {other vegetables} 0.006405694 0.3579545 0.017895272 1
## [36] {pickled vegetables}    => {whole milk}          0.007117438 0.3977273 0.017895272 1
## [37] {baking powder}          => {other vegetables} 0.007320793 0.4137931 0.017691917 2
## [38] {baking powder}          => {whole milk}          0.009252669 0.5229885 0.017691917 2
## [39] {flour}                  => {other vegetables} 0.006304016 0.3625731 0.017386884 1
## [40] {flour}                  => {whole milk}          0.008439248 0.4853801 0.017386884 1
## [41] {soft cheese}            => {yogurt}             0.005998983 0.3511905 0.017081851 2
## [42] {soft cheese}            => {rolls/buns}        0.005388917 0.3154762 0.017081851 1
## [43] {soft cheese}            => {other vegetables} 0.007117438 0.4166667 0.017081851 2
## [44] {soft cheese}            => {whole milk}          0.007524148 0.4404762 0.017081851 1
## [45] {specialty bar}          => {soda}               0.007219115 0.2639405 0.027351296 1
## [46] {specialty bar}          => {rolls/buns}        0.005592272 0.2044610 0.027351296 1
## [47] {specialty bar}          => {other vegetables} 0.005592272 0.2044610 0.027351296 1
## [48] {specialty bar}          => {whole milk}          0.006507372 0.2379182 0.027351296 0
## [49] {misc. beverages}        => {bottled water}       0.005287239 0.1863799 0.028368073 1
## [50] {misc. beverages}        => {soda}               0.007320793 0.2580645 0.028368073 1
## [51] {misc. beverages}        => {other vegetables} 0.005592272 0.1971326 0.028368073 1
## [52] {misc. beverages}        => {whole milk}          0.007015760 0.2473118 0.028368073 0
## [53] {grapes}                 => {tropical fruit}   0.006100661 0.2727273 0.022369090 2
## [54] {grapes}                 => {other vegetables} 0.009049314 0.4045455 0.022369090 2
## [55] {grapes}                 => {whole milk}          0.007320793 0.3272727 0.022369090 1
## [56] {cat food}               => {yogurt}             0.006202339 0.2663755 0.023284189 1
## [57] {cat food}               => {other vegetables} 0.006507372 0.2794760 0.023284189 1
## [58] {cat food}               => {whole milk}          0.008845958 0.3799127 0.023284189 1
## [59] {specialty chocolate}    => {soda}               0.006304016 0.2073579 0.030401627 1
## [60] {specialty chocolate}    => {rolls/buns}        0.005592272 0.1839465 0.030401627 1
## [61] {specialty chocolate}    => {other vegetables} 0.006100661 0.2006689 0.030401627 1
## [62] {specialty chocolate}    => {whole milk}          0.008032537 0.2642140 0.030401627 1
## [63] {meat}                   => {sausage}            0.005287239 0.2047244 0.025826131 2
## [64] {meat}                   => {root vegetables} 0.005083884 0.1968504 0.025826131 1
## [65] {meat}                   => {soda}               0.005490595 0.2125984 0.025826131 1
## [66] {meat}                   => {yogurt}             0.005287239 0.2047244 0.025826131 1
## [67] {meat}                   => {rolls/buns}        0.006914082 0.2677165 0.025826131 1
## [68] {meat}                   => {other vegetables} 0.009964413 0.3858268 0.025826131 1
## [69] {meat}                   => {whole milk}          0.009964413 0.3858268 0.025826131 1
## [70] {frozen meals}            => {tropical fruit}   0.005490595 0.1935484 0.028368073 1
## [71] {frozen meals}            => {soda}               0.006202339 0.2186380 0.028368073 1
## [72] {frozen meals}            => {yogurt}             0.006202339 0.2186380 0.028368073 1
## [73] {frozen meals}            => {other vegetables} 0.007524148 0.2652330 0.028368073 1
## [74] {frozen meals}            => {whole milk}          0.009862735 0.3476703 0.028368073 1
## [75] {hard cheese}             => {sausage}            0.005185562 0.2116183 0.024504321 2
## [76] {hard cheese}             => {root vegetables} 0.005592272 0.2282158 0.024504321 2
## [77] {hard cheese}             => {yogurt}             0.006405694 0.2614108 0.024504321 1
## [78] {hard cheese}             => {rolls/buns}        0.005897306 0.2406639 0.024504321 1

```

```

## [79] {hard cheese} => {other vegetables} 0.009456024 0.3858921 0.024504321 1
## [80] {hard cheese} => {whole milk} 0.010066090 0.4107884 0.024504321 1
## [81] {butter milk} => {pip fruit} 0.005083884 0.1818182 0.027961362 2
## [82] {butter milk} => {tropical fruit} 0.005490595 0.1963636 0.027961362 1
## [83] {butter milk} => {root vegetables} 0.005083884 0.1818182 0.027961362 1
## [84] {butter milk} => {yogurt} 0.008540925 0.3054545 0.027961362 2
## [85] {butter milk} => {rolls/buns} 0.007625826 0.2727273 0.027961362 1
## [86] {butter milk} => {other vegetables} 0.010371124 0.3709091 0.027961362 1
## [87] {butter milk} => {whole milk} 0.011591256 0.4145455 0.027961362 1
## [88] {candy} => {tropical fruit} 0.005388917 0.1802721 0.029893238 1
## [89] {candy} => {soda} 0.008642603 0.2891156 0.029893238 1
## [90] {candy} => {yogurt} 0.005490595 0.1836735 0.029893238 1
## [91] {candy} => {rolls/buns} 0.007117438 0.2380952 0.029893238 1
## [92] {candy} => {other vegetables} 0.006914082 0.2312925 0.029893238 1
## [93] {candy} => {whole milk} 0.008235892 0.2755102 0.029893238 1
## [94] {ham} => {white bread} 0.005083884 0.1953125 0.026029487 4
## [95] {white bread} => {ham} 0.005083884 0.1207729 0.042094560 4
## [96] {ham} => {tropical fruit} 0.005388917 0.2070312 0.026029487 1
## [97] {ham} => {yogurt} 0.006710727 0.2578125 0.026029487 1
## [98] {ham} => {rolls/buns} 0.006914082 0.2656250 0.026029487 1
## [99] {ham} => {other vegetables} 0.009150991 0.3515625 0.026029487 1
## [100] {ham} => {whole milk} 0.011489578 0.4414062 0.026029487 1
## [101] {sliced cheese} => {sausage} 0.007015760 0.2863071 0.024504321 3
## [102] {sliced cheese} => {tropical fruit} 0.005287239 0.2157676 0.024504321 2
## [103] {sliced cheese} => {root vegetables} 0.005592272 0.2282158 0.024504321 2
## [104] {sliced cheese} => {soda} 0.005083884 0.2074689 0.024504321 1
## [105] {sliced cheese} => {yogurt} 0.008032537 0.3278008 0.024504321 2
## [106] {sliced cheese} => {rolls/buns} 0.007625826 0.3112033 0.024504321 1
## [107] {sliced cheese} => {other vegetables} 0.009049314 0.3692946 0.024504321 1
## [108] {sliced cheese} => {whole milk} 0.010777834 0.4398340 0.024504321 1
## [109] {UHT-milk} => {bottled water} 0.007320793 0.2188450 0.033451957 1
## [110] {UHT-milk} => {soda} 0.007625826 0.2279635 0.033451957 1
## [111] {UHT-milk} => {yogurt} 0.007422471 0.2218845 0.033451957 1
## [112] {UHT-milk} => {rolls/buns} 0.006405694 0.1914894 0.033451957 1
## [113] {UHT-milk} => {other vegetables} 0.008134215 0.2431611 0.033451957 1
## [114] {oil} => {root vegetables} 0.007015760 0.2500000 0.028063040 2
## [115] {oil} => {yogurt} 0.005287239 0.1884058 0.028063040 1
## [116] {oil} => {rolls/buns} 0.005083884 0.1811594 0.028063040 0
## [117] {oil} => {other vegetables} 0.009964413 0.3550725 0.028063040 1
## [118] {oil} => {whole milk} 0.011286223 0.4021739 0.028063040 1
## [119] {onions} => {whipped/sour cream} 0.005083884 0.1639344 0.031011693 2
## [120] {onions} => {citrus fruit} 0.005592272 0.1803279 0.031011693 2
## [121] {onions} => {bottled water} 0.005897306 0.1901639 0.031011693 1
## [122] {onions} => {tropical fruit} 0.005693950 0.1836066 0.031011693 1
## [123] {onions} => {root vegetables} 0.009456024 0.3049180 0.031011693 2
## [124] {onions} => {soda} 0.005287239 0.1704918 0.031011693 0
## [125] {onions} => {yogurt} 0.007219115 0.2327869 0.031011693 1
## [126] {onions} => {rolls/buns} 0.006812405 0.2196721 0.031011693 1
## [127] {onions} => {other vegetables} 0.014234875 0.4590164 0.031011693 2
## [128] {onions} => {whole milk} 0.012099644 0.3901639 0.031011693 1
## [129] {berries} => {whipped/sour cream} 0.009049314 0.2721713 0.033248602 3
## [130] {whipped/sour cream} => {berries} 0.009049314 0.1262411 0.071682766 3
## [131] {berries} => {citrus fruit} 0.005388917 0.1620795 0.033248602 1
## [132] {berries} => {tropical fruit} 0.006710727 0.2018349 0.033248602 1

```

```

## [133] {berries}          => {root vegetables}      0.006609049  0.1987768 0.033248602 1
## [134] {berries}          => {soda}                 0.007320793  0.2201835 0.033248602 1
## [135] {berries}          => {yogurt}                0.010574479  0.3180428 0.033248602 2
## [136] {berries}          => {rolls/buns}          0.006609049  0.1987768 0.033248602 1
## [137] {berries}          => {other vegetables}    0.010269446  0.3088685 0.033248602 1
## [138] {berries}          => {whole milk}           0.011794611  0.3547401 0.033248602 1
## [139] {hamburger meat}   => {sausage}              0.005185562  0.1559633 0.033248602 1
## [140] {hamburger meat}   => {root vegetables}      0.006202339  0.1865443 0.033248602 1
## [141] {hamburger meat}   => {soda}                 0.005795628  0.1743119 0.033248602 0
## [142] {hamburger meat}   => {yogurt}                0.006507372  0.1957187 0.033248602 1
## [143] {hamburger meat}   => {rolls/buns}          0.008642603  0.2599388 0.033248602 1
## [144] {hamburger meat}   => {other vegetables}    0.013828165  0.4159021 0.033248602 2
## [145] {hamburger meat}   => {whole milk}           0.014743264  0.4434251 0.033248602 1
## [146] {hygiene articles}=> {napkins}               0.006100661  0.1851852 0.032943569 3
## [147] {napkins}          => {hygiene articles}     0.006100661  0.1165049 0.052364006 3
## [148] {hygiene articles}=> {citrus fruit}          0.005287239  0.1604938 0.032943569 1
## [149] {hygiene articles}=> {shopping bags}         0.005185562  0.1574074 0.032943569 1
## [150] {hygiene articles}=> {bottled water}          0.005693950  0.1728395 0.032943569 1
## [151] {hygiene articles}=> {tropical fruit}        0.006710727  0.2037037 0.032943569 1
## [152] {hygiene articles}=> {root vegetables}      0.005388917  0.1635802 0.032943569 1
## [153] {hygiene articles}=> {soda}                 0.007015760  0.2129630 0.032943569 1
## [154] {hygiene articles}=> {yogurt}                0.007320793  0.2222222 0.032943569 1
## [155] {hygiene articles}=> {rolls/buns}          0.005897306  0.1790123 0.032943569 0
## [156] {hygiene articles}=> {other vegetables}    0.009557702  0.2901235 0.032943569 1
## [157] {hygiene articles}=> {whole milk}           0.012811388  0.3888889 0.032943569 1
## [158] {salty snack}       => {fruit/vegetable juice} 0.005998983  0.1586022 0.037824098 2
## [159] {salty snack}       => {whipped/sour cream} 0.005185562  0.1370968 0.037824098 1
## [160] {salty snack}       => {pastry}                0.005185562  0.1370968 0.037824098 1
## [161] {salty snack}       => {shopping bags}        0.005998983  0.1586022 0.037824098 1
## [162] {salty snack}       => {sausage}               0.005287239  0.1397849 0.037824098 1
## [163] {salty snack}       => {tropical fruit}        0.005592272  0.1478495 0.037824098 1
## [164] {salty snack}       => {soda}                  0.009354347  0.2473118 0.037824098 1
## [165] {salty snack}       => {yogurt}                0.006202339  0.1639785 0.037824098 1
## [166] {salty snack}       => {other vegetables}    0.010777834  0.2849462 0.037824098 1
## [167] {salty snack}       => {whole milk}            0.011184545  0.2956989 0.037824098 1
## [168] {sugar}             => {margarine}             0.005490595  0.1621622 0.033858668 2
## [169] {sugar}             => {pastry}                0.005185562  0.1531532 0.033858668 1
## [170] {sugar}             => {root vegetables}      0.006405694  0.1891892 0.033858668 1
## [171] {sugar}             => {soda}                 0.007320793  0.2162162 0.033858668 1
## [172] {sugar}             => {yogurt}                0.006914082  0.2042042 0.033858668 1
## [173] {sugar}             => {rolls/buns}          0.007015760  0.2072072 0.033858668 1
## [174] {sugar}             => {other vegetables}    0.010777834  0.3183183 0.033858668 1
## [175] {sugar}             => {whole milk}           0.015048297  0.4444444 0.033858668 1
## [176] {waffles}           => {chocolate}             0.005795628  0.1507937 0.038434164 3
## [177] {waffles}           => {waffles}                0.005795628  0.1168033 0.049618709 3
## [178] {waffles}           => {whipped/sour cream} 0.005083884  0.1322751 0.038434164 1
## [179] {waffles}           => {pastry}                0.007015760  0.1825397 0.038434164 2
## [180] {waffles}           => {shopping bags}        0.005490595  0.1428571 0.038434164 1
## [181] {waffles}           => {tropical fruit}        0.006100661  0.1587302 0.038434164 1
## [182] {waffles}           => {root vegetables}      0.006609049  0.1719577 0.038434164 1
## [183] {waffles}           => {soda}                  0.009557702  0.2486772 0.038434164 1
## [184] {waffles}           => {yogurt}                0.007524148  0.1957672 0.038434164 1
## [185] {waffles}           => {rolls/buns}          0.009150991  0.2380952 0.038434164 1
## [186] {waffles}           => {other vegetables}    0.010066090  0.2619048 0.038434164 1

```

## [187]	{waffles}	=> {whole milk}	0.012709710	0.3306878	0.038434164	1
## [188]	{long life bakery product}	=> {chocolate}	0.005287239	0.1413043	0.037417387	2
## [189]	{chocolate}	=> {long life bakery product}	0.005287239	0.1065574	0.049618709	2
## [190]	{long life bakery product}	=> {fruit/vegetable juice}	0.006202339	0.1657609	0.037417387	2
## [191]	{long life bakery product}	=> {whipped/sour cream}	0.005795628	0.1548913	0.037417387	2
## [192]	{long life bakery product}	=> {pastry}	0.005897306	0.1576087	0.037417387	1
## [193]	{long life bakery product}	=> {shopping bags}	0.005388917	0.1440217	0.037417387	1
## [194]	{long life bakery product}	=> {sausage}	0.005388917	0.1440217	0.037417387	1
## [195]	{long life bakery product}	=> {tropical fruit}	0.006304016	0.1684783	0.037417387	1
## [196]	{long life bakery product}	=> {root vegetables}	0.005287239	0.1413043	0.037417387	1
## [197]	{long life bakery product}	=> {soda}	0.007625826	0.2038043	0.037417387	1
## [198]	{long life bakery product}	=> {yogurt}	0.008744281	0.2336957	0.037417387	1
## [199]	{long life bakery product}	=> {rolls/buns}	0.007930859	0.2119565	0.037417387	1
## [200]	{long life bakery product}	=> {other vegetables}	0.010676157	0.2853261	0.037417387	1
## [201]	{long life bakery product}	=> {whole milk}	0.013523132	0.3614130	0.037417387	1
## [202]	{dessert}	=> {curd}	0.005185562	0.1397260	0.037112354	2
## [203]	{dessert}	=> {fruit/vegetable juice}	0.005998983	0.1616438	0.037112354	2
## [204]	{dessert}	=> {pastry}	0.005388917	0.1452055	0.037112354	1
## [205]	{dessert}	=> {shopping bags}	0.006202339	0.1671233	0.037112354	1
## [206]	{dessert}	=> {sausage}	0.005897306	0.1589041	0.037112354	1
## [207]	{dessert}	=> {bottled water}	0.005185562	0.1397260	0.037112354	1
## [208]	{dessert}	=> {tropical fruit}	0.006304016	0.1698630	0.037112354	1
## [209]	{dessert}	=> {root vegetables}	0.005795628	0.1561644	0.037112354	1
## [210]	{dessert}	=> {soda}	0.009862735	0.2657534	0.037112354	1
## [211]	{dessert}	=> {yogurt}	0.009862735	0.2657534	0.037112354	1
## [212]	{dessert}	=> {rolls/buns}	0.006812405	0.1835616	0.037112354	0
## [213]	{dessert}	=> {other vegetables}	0.011591256	0.3123288	0.037112354	1
## [214]	{dessert}	=> {whole milk}	0.013726487	0.3698630	0.037112354	1
## [215]	{canned beer}	=> {shopping bags}	0.011387900	0.1465969	0.077681749	1
## [216]	{shopping bags}	=> {canned beer}	0.011387900	0.1155831	0.098525674	1
## [217]	{canned beer}	=> {bottled water}	0.008032537	0.1034031	0.077681749	0
## [218]	{canned beer}	=> {soda}	0.013828165	0.1780105	0.077681749	1
## [219]	{canned beer}	=> {rolls/buns}	0.011286223	0.1452880	0.077681749	0
## [220]	{canned beer}	=> {other vegetables}	0.009049314	0.1164921	0.077681749	0
## [221]	{canned beer}	=> {whole milk}	0.008845958	0.1138743	0.077681749	0
## [222]	{cream cheese}	=> {curd}	0.005083884	0.1282051	0.039654296	2
## [223]	{cream cheese}	=> {domestic eggs}	0.005083884	0.1282051	0.039654296	2
## [224]	{cream cheese}	=> {fruit/vegetable juice}	0.005693950	0.1435897	0.039654296	1
## [225]	{cream cheese}	=> {whipped/sour cream}	0.006405694	0.1615385	0.039654296	2
## [226]	{cream cheese}	=> {pip fruit}	0.006100661	0.1538462	0.039654296	2
## [227]	{cream cheese}	=> {citrus fruit}	0.005693950	0.1435897	0.039654296	1
## [228]	{cream cheese}	=> {shopping bags}	0.005592272	0.1410256	0.039654296	1
## [229]	{cream cheese}	=> {sausage}	0.005592272	0.1410256	0.039654296	1
## [230]	{cream cheese}	=> {bottled water}	0.005897306	0.1487179	0.039654296	1
## [231]	{cream cheese}	=> {tropical fruit}	0.007219115	0.1820513	0.039654296	1
## [232]	{cream cheese}	=> {root vegetables}	0.007524148	0.1897436	0.039654296	1
## [233]	{cream cheese}	=> {soda}	0.006812405	0.1717949	0.039654296	0
## [234]	{cream cheese}	=> {yogurt}	0.012404677	0.3128205	0.039654296	2
## [235]	{cream cheese}	=> {rolls/buns}	0.009964413	0.2512821	0.039654296	1
## [236]	{cream cheese}	=> {other vegetables}	0.013726487	0.3461538	0.039654296	1
## [237]	{cream cheese}	=> {whole milk}	0.016471784	0.4153846	0.039654296	1
## [238]	{chicken}	=> {frozen vegetables}	0.006710727	0.1563981	0.042907982	3
## [239]	{frozen vegetables}	=> {chicken}	0.006710727	0.1395349	0.048093543	3
## [240]	{chicken}	=> {pork}	0.005795628	0.1350711	0.042907982	2

## [241]	{pork}	=> {chicken}	0.005795628	0.1005291	0.057651246	2
## [242]	{chicken}	=> {butter}	0.005795628	0.1350711	0.042907982	2
## [243]	{butter}	=> {chicken}	0.005795628	0.1045872	0.055414337	2
## [244]	{chicken}	=> {newspapers}	0.005185562	0.1208531	0.042907982	1
## [245]	{chicken}	=> {domestic eggs}	0.006202339	0.1445498	0.042907982	2
## [246]	{chicken}	=> {whipped/sour cream}	0.007219115	0.1682464	0.042907982	2
## [247]	{whipped/sour cream}	=> {chicken}	0.007219115	0.1007092	0.071682766	2
## [248]	{chicken}	=> {citrus fruit}	0.006914082	0.1611374	0.042907982	1
## [249]	{chicken}	=> {sausage}	0.005287239	0.1232227	0.042907982	1
## [250]	{chicken}	=> {bottled water}	0.005287239	0.1232227	0.042907982	1
## [251]	{chicken}	=> {tropical fruit}	0.006405694	0.1492891	0.042907982	1
## [252]	{chicken}	=> {root vegetables}	0.010879512	0.2535545	0.042907982	2
## [253]	{chicken}	=> {soda}	0.008337570	0.1943128	0.042907982	1
## [254]	{chicken}	=> {yogurt}	0.008337570	0.1943128	0.042907982	1
## [255]	{chicken}	=> {rolls/buns}	0.009659380	0.2251185	0.042907982	1
## [256]	{chicken}	=> {other vegetables}	0.017895272	0.4170616	0.042907982	2
## [257]	{chicken}	=> {whole milk}	0.017590239	0.4099526	0.042907982	1
## [258]	{white bread}	=> {frankfurter}	0.005185562	0.1231884	0.042094560	2
## [259]	{white bread}	=> {domestic eggs}	0.005795628	0.1376812	0.042094560	2
## [260]	{white bread}	=> {fruit/vegetable juice}	0.007422471	0.1763285	0.042094560	2
## [261]	{fruit/vegetable juice}	=> {white bread}	0.007422471	0.1026723	0.072292832	2
## [262]	{white bread}	=> {whipped/sour cream}	0.005490595	0.1304348	0.042094560	1
## [263]	{white bread}	=> {pip fruit}	0.006609049	0.1570048	0.042094560	2
## [264]	{white bread}	=> {pastry}	0.005592272	0.1328502	0.042094560	1
## [265]	{white bread}	=> {shopping bags}	0.007422471	0.1763285	0.042094560	1
## [266]	{white bread}	=> {sausage}	0.007219115	0.1714976	0.042094560	1
## [267]	{white bread}	=> {tropical fruit}	0.008744281	0.2077295	0.042094560	1
## [268]	{white bread}	=> {root vegetables}	0.007930859	0.1884058	0.042094560	1
## [269]	{white bread}	=> {soda}	0.010269446	0.2439614	0.042094560	1
## [270]	{white bread}	=> {yogurt}	0.009049314	0.2149758	0.042094560	1
## [271]	{white bread}	=> {rolls/buns}	0.006507372	0.1545894	0.042094560	0
## [272]	{white bread}	=> {other vegetables}	0.013726487	0.3260870	0.042094560	1
## [273]	{white bread}	=> {whole milk}	0.017081851	0.4057971	0.042094560	1
## [274]	{chocolate}	=> {butter}	0.006202339	0.1250000	0.049618709	2
## [275]	{butter}	=> {chocolate}	0.006202339	0.1119266	0.055414337	2
## [276]	{chocolate}	=> {newspapers}	0.005490595	0.1106557	0.049618709	1
## [277]	{chocolate}	=> {fruit/vegetable juice}	0.006812405	0.1372951	0.049618709	1
## [278]	{chocolate}	=> {pip fruit}	0.006100661	0.1229508	0.049618709	1
## [279]	{chocolate}	=> {pastry}	0.008032537	0.1618852	0.049618709	1
## [280]	{chocolate}	=> {citrus fruit}	0.006405694	0.1290984	0.049618709	1
## [281]	{chocolate}	=> {shopping bags}	0.008134215	0.1639344	0.049618709	1
## [282]	{chocolate}	=> {sausage}	0.006609049	0.1331967	0.049618709	1
## [283]	{chocolate}	=> {bottled water}	0.005795628	0.1168033	0.049618709	1
## [284]	{chocolate}	=> {tropical fruit}	0.008134215	0.1639344	0.049618709	1
## [285]	{chocolate}	=> {root vegetables}	0.006405694	0.1290984	0.049618709	1
## [286]	{chocolate}	=> {soda}	0.013523132	0.2725410	0.049618709	1
## [287]	{chocolate}	=> {yogurt}	0.009252669	0.1864754	0.049618709	1
## [288]	{chocolate}	=> {rolls/buns}	0.011794611	0.2377049	0.049618709	1
## [289]	{chocolate}	=> {other vegetables}	0.012709710	0.2561475	0.049618709	1
## [290]	{chocolate}	=> {whole milk}	0.016675140	0.3360656	0.049618709	1
## [291]	{coffee}	=> {fruit/vegetable juice}	0.005998983	0.1033275	0.058057956	1
## [292]	{coffee}	=> {whipped/sour cream}	0.006100661	0.1050788	0.058057956	1
## [293]	{coffee}	=> {pip fruit}	0.006914082	0.1190893	0.058057956	1
## [294]	{coffee}	=> {pastry}	0.006914082	0.1190893	0.058057956	1

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## [295] {coffee}          => {citrus fruit}          0.006405694 0.1103327 0.058057956 1
## [296] {coffee}          => {shopping bags}        0.009354347 0.1611208 0.058057956 1
## [297] {coffee}          => {sausage}            0.006914082 0.1190893 0.058057956 1
## [298] {coffee}          => {bottled water}        0.007320793 0.1260946 0.058057956 1
## [299] {coffee}          => {tropical fruit}       0.007117438 0.1225919 0.058057956 1
## [300] {coffee}          => {root vegetables}      0.007320793 0.1260946 0.058057956 1
## [301] {coffee}          => {soda}                 0.009964413 0.1716287 0.058057956 0
## [302] {coffee}          => {yogurt}               0.009761057 0.1681261 0.058057956 1
## [303] {coffee}          => {rolls/buns}          0.010981190 0.1891419 0.058057956 1
## [304] {coffee}          => {other vegetables}     0.013421454 0.2311734 0.058057956 1
## [305] {coffee}          => {whole milk}           0.018708693 0.3222417 0.058057956 1
## [306] {frozen vegetables}=> {pork}                 0.006405694 0.1331924 0.048093543 2
## [307] {pork}             => {frozen vegetables}    0.006405694 0.1111111 0.057651246 2
## [308] {frozen vegetables}=> {frankfurter}          0.005083884 0.1057082 0.048093543 1
## [309] {frozen vegetables}=> {margarine}            0.005083884 0.1057082 0.048093543 1
## [310] {frozen vegetables}=> {butter}                0.005795628 0.1205074 0.048093543 2
## [311] {butter}           => {frozen vegetables}    0.005795628 0.1045872 0.055414337 2
## [312] {frozen vegetables}=> {domestic eggs}         0.005185562 0.1078224 0.048093543 1
## [313] {frozen vegetables}=> {fruit/vegetable juice} 0.007829181 0.1627907 0.048093543 2
## [314] {fruit/vegetable juice}=> {frozen vegetables} 0.007829181 0.1082982 0.072292832 2
## [315] {frozen vegetables}=> {whipped/sour cream}    0.007930859 0.1649049 0.048093543 2
## [316] {whipped/sour cream}=> {frozen vegetables}   0.007930859 0.1106383 0.071682766 2
## [317] {frozen vegetables}=> {pip fruit}            0.007320793 0.1522199 0.048093543 2
## [318] {frozen vegetables}=> {citrus fruit}          0.006609049 0.1374207 0.048093543 1
## [319] {frozen vegetables}=> {sausage}              0.005998983 0.1247357 0.048093543 1
## [320] {frozen vegetables}=> {bottled water}         0.006202339 0.1289641 0.048093543 1
## [321] {frozen vegetables}=> {tropical fruit}        0.008744281 0.1818182 0.048093543 1
## [322] {frozen vegetables}=> {root vegetables}       0.011591256 0.2410148 0.048093543 2
## [323] {root vegetables}=> {frozen vegetables}      0.011591256 0.1063433 0.108998475 2
## [324] {frozen vegetables}=> {soda}                  0.008642603 0.1797040 0.048093543 1
## [325] {frozen vegetables}=> {yogurt}                0.012404677 0.2579281 0.048093543 1
## [326] {frozen vegetables}=> {rolls/buns}           0.010167768 0.2114165 0.048093543 1
## [327] {frozen vegetables}=> {other vegetables}     0.017793594 0.3699789 0.048093543 1
## [328] {frozen vegetables}=> {whole milk}            0.020437214 0.4249471 0.048093543 1
## [329] {beef}              => {pork}                 0.007625826 0.1453488 0.052465684 2
## [330] {pork}              => {beef}                 0.007625826 0.1322751 0.057651246 2
## [331] {beef}              => {margarine}           0.006202339 0.1182171 0.052465684 2
## [332] {margarine}         => {beef}                 0.006202339 0.1059028 0.058566345 2
## [333] {beef}              => {butter}               0.005795628 0.1104651 0.052465684 1
## [334] {butter}             => {beef}                 0.005795628 0.1045872 0.055414337 1
## [335] {beef}              => {newspapers}          0.006405694 0.1220930 0.052465684 1
## [336] {beef}              => {domestic eggs}        0.005998983 0.1143411 0.052465684 1
## [337] {beef}              => {whipped/sour cream} 0.006710727 0.1279070 0.052465684 1
## [338] {beef}              => {pastry}               0.006304016 0.1201550 0.052465684 1
## [339] {beef}              => {citrus fruit}         0.008439248 0.1608527 0.052465684 1
## [340] {citrus fruit}       => {beef}                 0.008439248 0.1019656 0.082765633 1
## [341] {beef}              => {sausage}             0.005592272 0.1065891 0.052465684 1
## [342] {beef}              => {bottled water}        0.006202339 0.1182171 0.052465684 1
## [343] {beef}              => {tropical fruit}       0.007625826 0.1453488 0.052465684 1
## [344] {beef}              => {root vegetables}     0.017386884 0.3313953 0.052465684 3
## [345] {root vegetables}=> {beef}                 0.017386884 0.1595149 0.108998475 3
## [346] {beef}              => {soda}                 0.008134215 0.1550388 0.052465684 0
## [347] {beef}              => {yogurt}               0.011692933 0.2228682 0.052465684 1
## [348] {beef}              => {rolls/buns}          0.013624809 0.2596899 0.052465684 1

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## [349] {beef}                                     => {other vegetables}          0.019725470 0.3759690 0.052465684 1
## [350] {other vegetables}                      => {beef}                      0.019725470 0.1019443 0.193492628 1
## [351] {beef}                                     => {whole milk}                0.021250635 0.4050388 0.052465684 1
## [352] {curd}                                    => {margarine}                 0.006304016 0.1183206 0.053279105 2
## [353] {margarine}                                => {curd}                      0.006304016 0.1076389 0.058566345 2
## [354] {curd}                                    => {butter}                     0.006812405 0.1278626 0.053279105 2
## [355] {butter}                                   => {curd}                      0.006812405 0.1229358 0.055414337 2
## [356] {curd}                                    => {newspapers}                0.005693950 0.1068702 0.053279105 1
## [357] {curd}                                    => {domestic eggs}              0.006507372 0.1221374 0.053279105 1
## [358] {domestic eggs}                            => {curd}                      0.006507372 0.1025641 0.063446873 1
## [359] {curd}                                    => {whipped/sour cream}         0.010472801 0.1965649 0.053279105 2
## [360] {whipped/sour cream}                      => {curd}                      0.010472801 0.1460993 0.071682766 2
## [361] {curd}                                    => {pip fruit}                 0.007829181 0.1469466 0.053279105 1
## [362] {pip fruit}                               => {curd}                      0.007829181 0.1034946 0.075648195 1
## [363] {curd}                                    => {pastry}                     0.007524148 0.1412214 0.053279105 1
## [364] {curd}                                    => {citrus fruit}               0.007117438 0.1335878 0.053279105 1
## [365] {curd}                                    => {shopping bags}              0.005388917 0.1011450 0.053279105 1
## [366] {curd}                                    => {sausage}                    0.007625826 0.1431298 0.053279105 1
## [367] {curd}                                    => {bottled water}              0.006100661 0.1145038 0.053279105 1
## [368] {curd}                                    => {tropical fruit}             0.010269446 0.1927481 0.053279105 1
## [369] {curd}                                    => {root vegetables}            0.010879512 0.2041985 0.053279105 1
## [370] {curd}                                    => {soda}                        0.008134215 0.1526718 0.053279105 0
## [371] {curd}                                    => {yogurt}                     0.017285206 0.3244275 0.053279105 2
## [372] {yogurt}                                 => {curd}                      0.017285206 0.1239067 0.139501779 2
## [373] {curd}                                    => {rolls/buns}                 0.010066090 0.1889313 0.053279105 1
## [374] {curd}                                    => {other vegetables}           0.017183528 0.3225191 0.053279105 1
## [375] {curd}                                    => {whole milk}                 0.026131164 0.4904580 0.053279105 1
## [376] {whole milk}                             => {curd}                      0.026131164 0.1022682 0.255516014 1
## [377] {napkins}                                => {newspapers}                0.006202339 0.1184466 0.052364006 1
## [378] {napkins}                                => {domestic eggs}              0.005998983 0.1145631 0.052364006 1
## [379] {napkins}                                => {fruit/vegetable juice}      0.006914082 0.1320388 0.052364006 1
## [380] {napkins}                                => {whipped/sour cream}         0.007219115 0.1378641 0.052364006 1
## [381] {whipped/sour cream}                      => {napkins}                   0.007219115 0.1007092 0.071682766 1
## [382] {napkins}                                => {pip fruit}                 0.006710727 0.1281553 0.052364006 1
## [383] {napkins}                                => {pastry}                     0.007015760 0.1339806 0.052364006 1
## [384] {napkins}                                => {citrus fruit}               0.007625826 0.1456311 0.052364006 1
## [385] {napkins}                                => {shopping bags}              0.007219115 0.1378641 0.052364006 1
## [386] {napkins}                                => {sausage}                    0.006710727 0.1281553 0.052364006 1
## [387] {napkins}                                => {bottled water}              0.008642603 0.1650485 0.052364006 1
## [388] {napkins}                                => {tropical fruit}             0.010066090 0.1922330 0.052364006 1
## [389] {napkins}                                => {root vegetables}            0.009964413 0.1902913 0.052364006 1
## [390] {napkins}                                => {soda}                        0.011997966 0.2291262 0.052364006 1
## [391] {napkins}                                => {yogurt}                     0.012302999 0.2349515 0.052364006 1
## [392] {napkins}                                => {rolls/buns}                 0.011692933 0.2233010 0.052364006 1
## [393] {napkins}                                => {other vegetables}           0.014438231 0.2757282 0.052364006 1
## [394] {napkins}                                => {whole milk}                 0.019725470 0.3766990 0.052364006 1
## [395] {pork}                                     => {frankfurter}                0.005897306 0.1022928 0.057651246 1
## [396] {frankfurter}                             => {pork}                       0.005897306 0.1000000 0.058973055 1
## [397] {pork}                                     => {margarine}                  0.006405694 0.1111111 0.057651246 1
## [398] {margarine}                               => {pork}                       0.006405694 0.1093750 0.058566345 1
## [399] {pork}                                     => {newspapers}                 0.006609049 0.1146384 0.057651246 1
## [400] {pork}                                     => {whipped/sour cream}          0.008235892 0.1428571 0.057651246 1
## [401] {whipped/sour cream}                      => {pork}                      0.008235892 0.1148936 0.071682766 1
## [402] {pork}                                     => {pip fruit}                  0.006100661 0.1058201 0.057651246 1

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## [403]	{pork}	=> {pastry}	0.006304016	0.1093474	0.057651246	1
## [404]	{pork}	=> {citrus fruit}	0.006507372	0.1128748	0.057651246	1
## [405]	{pork}	=> {shopping bags}	0.006405694	0.1111111	0.057651246	1
## [406]	{pork}	=> {sausage}	0.006507372	0.1128748	0.057651246	1
## [407]	{pork}	=> {bottled water}	0.007422471	0.1287478	0.057651246	1
## [408]	{pork}	=> {tropical fruit}	0.008540925	0.1481481	0.057651246	1
## [409]	{pork}	=> {root vegetables}	0.013624809	0.2363316	0.057651246	2
## [410]	{root vegetables}	=> {pork}	0.013624809	0.1250000	0.108998475	2
## [411]	{pork}	=> {soda}	0.011896289	0.2063492	0.057651246	1
## [412]	{pork}	=> {yogurt}	0.009557702	0.1657848	0.057651246	1
## [413]	{pork}	=> {rolls/buns}	0.011286223	0.1957672	0.057651246	1
## [414]	{pork}	=> {other vegetables}	0.021657346	0.3756614	0.057651246	1
## [415]	{other vegetables}	=> {pork}	0.021657346	0.1119285	0.193492628	1
## [416]	{pork}	=> {whole milk}	0.022165735	0.3844797	0.057651246	1
## [417]	{frankfurter}	=> {brown bread}	0.007117438	0.1206897	0.058973055	1
## [418]	{brown bread}	=> {frankfurter}	0.007117438	0.1097179	0.064870361	1
## [419]	{frankfurter}	=> {margarine}	0.006405694	0.1086207	0.058973055	1
## [420]	{margarine}	=> {frankfurter}	0.006405694	0.1093750	0.058566345	1
## [421]	{frankfurter}	=> {domestic eggs}	0.007015760	0.1189655	0.058973055	1
## [422]	{domestic eggs}	=> {frankfurter}	0.007015760	0.1105769	0.063446873	1
## [423]	{frankfurter}	=> {whipped/sour cream}	0.006202339	0.1051724	0.058973055	1
## [424]	{frankfurter}	=> {pip fruit}	0.007219115	0.1224138	0.058973055	1
## [425]	{frankfurter}	=> {pastry}	0.008337570	0.1413793	0.058973055	1
## [426]	{frankfurter}	=> {citrus fruit}	0.006507372	0.1103448	0.058973055	1
## [427]	{frankfurter}	=> {shopping bags}	0.008235892	0.1396552	0.058973055	1
## [428]	{frankfurter}	=> {sausage}	0.010066090	0.1706897	0.058973055	1
## [429]	{sausage}	=> {frankfurter}	0.010066090	0.1071429	0.093950178	1
## [430]	{frankfurter}	=> {bottled water}	0.007320793	0.1241379	0.058973055	1
## [431]	{frankfurter}	=> {tropical fruit}	0.009456024	0.1603448	0.058973055	1
## [432]	{frankfurter}	=> {root vegetables}	0.010167768	0.1724138	0.058973055	1
## [433]	{frankfurter}	=> {soda}	0.011286223	0.1913793	0.058973055	1
## [434]	{frankfurter}	=> {yogurt}	0.011184545	0.1896552	0.058973055	1
## [435]	{frankfurter}	=> {rolls/buns}	0.019217082	0.3258621	0.058973055	1
## [436]	{rolls/buns}	=> {frankfurter}	0.019217082	0.1044776	0.183934926	1
## [437]	{frankfurter}	=> {other vegetables}	0.016471784	0.2793103	0.058973055	1
## [438]	{frankfurter}	=> {whole milk}	0.020538892	0.3482759	0.058973055	1
## [439]	{margarine}	=> {bottled beer}	0.006100661	0.1041667	0.058566345	1
## [440]	{butter}	=> {bottled beer}	0.005795628	0.1045872	0.055414337	1
## [441]	{bottled beer}	=> {bottled water}	0.015760041	0.1957071	0.080528724	1
## [442]	{bottled water}	=> {bottled beer}	0.015760041	0.1425943	0.110523640	1
## [443]	{bottled beer}	=> {tropical fruit}	0.008235892	0.1022727	0.080528724	0
## [444]	{bottled beer}	=> {root vegetables}	0.009659380	0.1199495	0.080528724	1
## [445]	{bottled beer}	=> {soda}	0.016980173	0.2108586	0.080528724	1
## [446]	{bottled beer}	=> {yogurt}	0.009252669	0.1148990	0.080528724	0
## [447]	{bottled beer}	=> {rolls/buns}	0.013624809	0.1691919	0.080528724	0
## [448]	{bottled beer}	=> {other vegetables}	0.016166751	0.2007576	0.080528724	1
## [449]	{bottled beer}	=> {whole milk}	0.020437214	0.2537879	0.080528724	0
## [450]	{brown bread}	=> {margarine}	0.006507372	0.1003135	0.064870361	1
## [451]	{margarine}	=> {brown bread}	0.006507372	0.1111111	0.058566345	1
## [452]	{butter}	=> {brown bread}	0.005795628	0.1045872	0.055414337	1
## [453]	{brown bread}	=> {newspapers}	0.007625826	0.1175549	0.064870361	1
## [454]	{brown bread}	=> {domestic eggs}	0.006812405	0.1050157	0.064870361	1
## [455]	{domestic eggs}	=> {brown bread}	0.006812405	0.1073718	0.063446873	1
## [456]	{brown bread}	=> {fruit/vegetable juice}	0.008337570	0.1285266	0.064870361	1

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## [457] {fruit/vegetable juice} => {brown bread} 0.008337570 0.1153305 0.072292832 1
## [458] {brown bread} => {pip fruit} 0.007625826 0.1175549 0.064870361 1
## [459] {pip fruit} => {brown bread} 0.007625826 0.1008065 0.075648195 1
## [460] {brown bread} => {pastry} 0.009659380 0.1489028 0.064870361 1
## [461] {pastry} => {brown bread} 0.009659380 0.1085714 0.088967972 1
## [462] {brown bread} => {citrus fruit} 0.008337570 0.1285266 0.064870361 1
## [463] {citrus fruit} => {brown bread} 0.008337570 0.1007371 0.082765633 1
## [464] {brown bread} => {shopping bags} 0.009252669 0.1426332 0.064870361 1
## [465] {brown bread} => {sausage} 0.010676157 0.1645768 0.064870361 1
## [466] {sausage} => {brown bread} 0.010676157 0.1136364 0.093950178 1
## [467] {brown bread} => {bottled water} 0.008235892 0.1269592 0.064870361 1
## [468] {brown bread} => {tropical fruit} 0.010676157 0.1645768 0.064870361 1
## [469] {tropical fruit} => {brown bread} 0.010676157 0.1017442 0.104931368 1
## [470] {brown bread} => {root vegetables} 0.010167768 0.1567398 0.064870361 1
## [471] {brown bread} => {soda} 0.012608033 0.1943574 0.064870361 1
## [472] {brown bread} => {yogurt} 0.014539908 0.2241379 0.064870361 1
## [473] {yogurt} => {brown bread} 0.014539908 0.1042274 0.139501779 1
## [474] {brown bread} => {rolls/buns} 0.012608033 0.1943574 0.064870361 1
## [475] {brown bread} => {other vegetables} 0.018708693 0.2884013 0.064870361 1
## [476] {brown bread} => {whole milk} 0.025216065 0.3887147 0.064870361 1
## [477] {margarine} => {butter} 0.006710727 0.1145833 0.058566345 2
## [478] {butter} => {margarine} 0.006710727 0.1211009 0.055414337 2
## [479] {margarine} => {newspapers} 0.007117438 0.1215278 0.058566345 1
## [480] {margarine} => {domestic eggs} 0.008337570 0.1423611 0.058566345 2
## [481] {domestic eggs} => {margarine} 0.008337570 0.1314103 0.063446873 2
## [482] {margarine} => {fruit/vegetable juice} 0.006202339 0.1059028 0.058566345 1
## [483] {margarine} => {whipped/sour cream} 0.006812405 0.1163194 0.058566345 1
## [484] {margarine} => {pip fruit} 0.008540925 0.1458333 0.058566345 1
## [485] {pip fruit} => {margarine} 0.008540925 0.1129032 0.075648195 1
## [486] {margarine} => {pastry} 0.006812405 0.1163194 0.058566345 1
## [487] {margarine} => {citrus fruit} 0.007930859 0.1354167 0.058566345 1
## [488] {margarine} => {sausage} 0.007117438 0.1215278 0.058566345 1
## [489] {margarine} => {bottled water} 0.010269446 0.1753472 0.058566345 1
## [490] {margarine} => {tropical fruit} 0.009354347 0.1597222 0.058566345 1
## [491] {margarine} => {root vegetables} 0.011082867 0.1892361 0.058566345 1
## [492] {root vegetables} => {margarine} 0.011082867 0.1016791 0.108998475 1
## [493] {margarine} => {soda} 0.010167768 0.1736111 0.058566345 0
## [494] {margarine} => {yogurt} 0.014234875 0.2430556 0.058566345 1
## [495] {yogurt} => {margarine} 0.014234875 0.1020408 0.139501779 1
## [496] {margarine} => {rolls/buns} 0.014743264 0.2517361 0.058566345 1
## [497] {margarine} => {other vegetables} 0.019725470 0.3368056 0.058566345 1
## [498] {other vegetables} => {margarine} 0.019725470 0.1019443 0.193492628 1
## [499] {margarine} => {whole milk} 0.024199288 0.4131944 0.058566345 1
## [500] {butter} => {newspapers} 0.005795628 0.1045872 0.055414337 1
## [501] {butter} => {domestic eggs} 0.009659380 0.1743119 0.055414337 2
## [502] {domestic eggs} => {butter} 0.009659380 0.1522436 0.063446873 2
## [503] {butter} => {fruit/vegetable juice} 0.008032537 0.1449541 0.055414337 2
## [504] {fruit/vegetable juice} => {butter} 0.008032537 0.1111111 0.072292832 2
## [505] {butter} => {whipped/sour cream} 0.010167768 0.1834862 0.055414337 2
## [506] {whipped/sour cream} => {butter} 0.010167768 0.1418440 0.071682766 2
## [507] {butter} => {pip fruit} 0.007320793 0.1321101 0.055414337 1
## [508] {butter} => {pastry} 0.007625826 0.1376147 0.055414337 1
## [509] {butter} => {citrus fruit} 0.009150991 0.1651376 0.055414337 1
## [510] {citrus fruit} => {butter} 0.009150991 0.1105651 0.082765633 1

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## [511] {butter}          => {sausage}          0.008642603 0.1559633 0.055414337 1
## [512] {butter}          => {bottled water}    0.008947636 0.1614679 0.055414337 1
## [513] {butter}          => {tropical fruit}  0.009964413 0.1798165 0.055414337 1
## [514] {butter}          => {root vegetables} 0.012913066 0.2330275 0.055414337 2
## [515] {root vegetables} => {butter}           0.012913066 0.1184701 0.108998475 2
## [516] {butter}          => {soda}             0.008845958 0.1596330 0.055414337 0
## [517] {butter}          => {yogurt}           0.014641586 0.2642202 0.055414337 1
## [518] {yogurt}          => {butter}           0.014641586 0.1049563 0.139501779 1
## [519] {butter}          => {rolls/buns}      0.013421454 0.2422018 0.055414337 1
## [520] {butter}          => {other vegetables} 0.020030503 0.3614679 0.055414337 1
## [521] {other vegetables}=> {butter}           0.020030503 0.1035208 0.193492628 1
## [522] {butter}          => {whole milk}       0.027554652 0.4972477 0.055414337 1
## [523] {whole milk}      => {butter}           0.027554652 0.1078392 0.255516014 1
## [524] {domestic eggs}   => {newspapers}       0.006914082 0.1089744 0.063446873 1
## [525] {newspapers}      => {fruit/vegetable juice} 0.008235892 0.1031847 0.079816980 1
## [526] {fruit/vegetable juice}=> {newspapers} 0.008235892 0.1139241 0.072292832 1
## [527] {whipped/sour cream}=> {newspapers} 0.007219115 0.1007092 0.071682766 1
## [528] {newspapers}      => {pastry}           0.008439248 0.1057325 0.079816980 1
## [529] {newspapers}      => {citrus fruit}     0.008337570 0.1044586 0.079816980 1
## [530] {citrus fruit}    => {newspapers}       0.008337570 0.1007371 0.082765633 1
## [531] {newspapers}      => {sausage}          0.008032537 0.1006369 0.079816980 1
## [532] {newspapers}      => {bottled water}    0.011286223 0.1414013 0.079816980 1
## [533] {bottled water}   => {newspapers}       0.011286223 0.1021159 0.110523640 1
## [534] {newspapers}      => {tropical fruit}  0.011794611 0.1477707 0.079816980 1
## [535] {tropical fruit} => {newspapers}       0.011794611 0.1124031 0.104931368 1
## [536] {newspapers}      => {root vegetables} 0.011489578 0.1439490 0.079816980 1
## [537] {root vegetables}=> {newspapers}       0.011489578 0.1054104 0.108998475 1
## [538] {newspapers}      => {soda}             0.014641586 0.1834395 0.079816980 1
## [539] {newspapers}      => {yogurt}           0.015353330 0.1923567 0.079816980 1
## [540] {yogurt}          => {newspapers}       0.015353330 0.1100583 0.139501779 1
## [541] {newspapers}      => {rolls/buns}      0.019725470 0.2471338 0.079816980 1
## [542] {rolls/buns}     => {newspapers}       0.019725470 0.1072416 0.183934926 1
## [543] {newspapers}      => {other vegetables} 0.019318760 0.2420382 0.079816980 1
## [544] {newspapers}      => {whole milk}       0.027351296 0.3426752 0.079816980 1
## [545] {whole milk}      => {newspapers}       0.027351296 0.1070434 0.255516014 1
## [546] {domestic eggs}   => {fruit/vegetable juice} 0.008032537 0.1266026 0.063446873 1
## [547] {fruit/vegetable juice}=> {domestic eggs} 0.008032537 0.1111111 0.072292832 1
## [548] {domestic eggs}   => {whipped/sour cream} 0.009964413 0.1570513 0.063446873 2
## [549] {whipped/sour cream}=> {domestic eggs} 0.009964413 0.1390071 0.071682766 2
## [550] {domestic eggs}   => {pip fruit}        0.008642603 0.1362179 0.063446873 1
## [551] {pip fruit}        => {domestic eggs} 0.008642603 0.1142473 0.075648195 1
## [552] {domestic eggs}   => {pastry}           0.009049314 0.1426282 0.063446873 1
## [553] {pastry}          => {domestic eggs} 0.009049314 0.1017143 0.088967972 1
## [554] {domestic eggs}   => {citrus fruit}     0.010371124 0.1634615 0.063446873 1
## [555] {citrus fruit}    => {domestic eggs} 0.010371124 0.1253071 0.082765633 1
## [556] {domestic eggs}   => {shopping bags}   0.009049314 0.1426282 0.063446873 1
## [557] {domestic eggs}   => {sausage}          0.009557702 0.1506410 0.063446873 1
## [558] {sausage}          => {domestic eggs} 0.009557702 0.1017316 0.093950178 1
## [559] {domestic eggs}   => {bottled water}    0.009150991 0.1442308 0.063446873 1
## [560] {domestic eggs}   => {tropical fruit}  0.011387900 0.1794872 0.063446873 1
## [561] {tropical fruit}  => {domestic eggs} 0.011387900 0.1085271 0.104931368 1
## [562] {domestic eggs}   => {root vegetables} 0.014336553 0.2259615 0.063446873 2
## [563] {root vegetables}=> {domestic eggs} 0.014336553 0.1315299 0.108998475 2
## [564] {domestic eggs}   => {soda}             0.012404677 0.1955128 0.063446873 1

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## [565]	{domestic eggs}	=> {yogurt}	0.014336553	0.2259615	0.063446873	1
## [566]	{yogurt}	=> {domestic eggs}	0.014336553	0.1027697	0.139501779	1
## [567]	{domestic eggs}	=> {rolls/buns}	0.015658363	0.2467949	0.063446873	1
## [568]	{domestic eggs}	=> {other vegetables}	0.022267412	0.3509615	0.063446873	1
## [569]	{other vegetables}	=> {domestic eggs}	0.022267412	0.1150815	0.193492628	1
## [570]	{domestic eggs}	=> {whole milk}	0.029994916	0.4727564	0.063446873	1
## [571]	{whole milk}	=> {domestic eggs}	0.029994916	0.1173896	0.255516014	1
## [572]	{fruit/vegetable juice}	=> {whipped/sour cream}	0.009049314	0.1251758	0.072292832	1
## [573]	{whipped/sour cream}	=> {fruit/vegetable juice}	0.009049314	0.1262411	0.071682766	1
## [574]	{fruit/vegetable juice}	=> {pip fruit}	0.009557702	0.1322082	0.072292832	1
## [575]	{pip fruit}	=> {fruit/vegetable juice}	0.009557702	0.1263441	0.075648195	1
## [576]	{fruit/vegetable juice}	=> {pastry}	0.008540925	0.1181435	0.072292832	1
## [577]	{fruit/vegetable juice}	=> {citrus fruit}	0.010371124	0.1434599	0.072292832	1
## [578]	{citrus fruit}	=> {fruit/vegetable juice}	0.010371124	0.1253071	0.082765633	1
## [579]	{fruit/vegetable juice}	=> {shopping bags}	0.010676157	0.1476793	0.072292832	1
## [580]	{shopping bags}	=> {fruit/vegetable juice}	0.010676157	0.1083591	0.098525674	1
## [581]	{fruit/vegetable juice}	=> {sausage}	0.010066090	0.1392405	0.072292832	1
## [582]	{sausage}	=> {fruit/vegetable juice}	0.010066090	0.1071429	0.093950178	1
## [583]	{fruit/vegetable juice}	=> {bottled water}	0.014234875	0.1969058	0.072292832	1
## [584]	{bottled water}	=> {fruit/vegetable juice}	0.014234875	0.1287948	0.110523640	1
## [585]	{fruit/vegetable juice}	=> {tropical fruit}	0.013726487	0.1898734	0.072292832	1
## [586]	{tropical fruit}	=> {fruit/vegetable juice}	0.013726487	0.1308140	0.104931368	1
## [587]	{fruit/vegetable juice}	=> {root vegetables}	0.011997966	0.1659634	0.072292832	1
## [588]	{root vegetables}	=> {fruit/vegetable juice}	0.011997966	0.1100746	0.108998475	1
## [589]	{fruit/vegetable juice}	=> {soda}	0.018403660	0.2545710	0.072292832	1
## [590]	{soda}	=> {fruit/vegetable juice}	0.018403660	0.1055394	0.174377224	1
## [591]	{fruit/vegetable juice}	=> {yogurt}	0.018708693	0.2587904	0.072292832	1
## [592]	{yogurt}	=> {fruit/vegetable juice}	0.018708693	0.1341108	0.139501779	1
## [593]	{fruit/vegetable juice}	=> {rolls/buns}	0.014539908	0.2011252	0.072292832	1
## [594]	{fruit/vegetable juice}	=> {other vegetables}	0.021047280	0.2911392	0.072292832	1
## [595]	{other vegetables}	=> {fruit/vegetable juice}	0.021047280	0.1087756	0.193492628	1
## [596]	{fruit/vegetable juice}	=> {whole milk}	0.026639553	0.3684951	0.072292832	1
## [597]	{whole milk}	=> {fruit/vegetable juice}	0.026639553	0.1042579	0.255516014	1
## [598]	{whipped/sour cream}	=> {pip fruit}	0.009252669	0.1290780	0.071682766	1
## [599]	{pip fruit}	=> {whipped/sour cream}	0.009252669	0.1223118	0.075648195	1
## [600]	{whipped/sour cream}	=> {pastry}	0.007524148	0.1049645	0.071682766	1
## [601]	{whipped/sour cream}	=> {citrus fruit}	0.010879512	0.1517730	0.071682766	1
## [602]	{citrus fruit}	=> {whipped/sour cream}	0.010879512	0.1314496	0.082765633	1
## [603]	{whipped/sour cream}	=> {shopping bags}	0.007930859	0.1106383	0.071682766	1
## [604]	{whipped/sour cream}	=> {sausage}	0.009049314	0.1262411	0.071682766	1
## [605]	{whipped/sour cream}	=> {bottled water}	0.008744281	0.1219858	0.071682766	1
## [606]	{whipped/sour cream}	=> {tropical fruit}	0.013828165	0.1929078	0.071682766	1
## [607]	{tropical fruit}	=> {whipped/sour cream}	0.013828165	0.1317829	0.104931368	1
## [608]	{whipped/sour cream}	=> {root vegetables}	0.017081851	0.2382979	0.071682766	2
## [609]	{root vegetables}	=> {whipped/sour cream}	0.017081851	0.1567164	0.108998475	2
## [610]	{whipped/sour cream}	=> {soda}	0.011591256	0.1617021	0.071682766	0
## [611]	{whipped/sour cream}	=> {yogurt}	0.020742247	0.2893617	0.071682766	2
## [612]	{yogurt}	=> {whipped/sour cream}	0.020742247	0.1486880	0.139501779	2
## [613]	{whipped/sour cream}	=> {rolls/buns}	0.014641586	0.2042553	0.071682766	1
## [614]	{whipped/sour cream}	=> {other vegetables}	0.028876462	0.4028369	0.071682766	2
## [615]	{other vegetables}	=> {whipped/sour cream}	0.028876462	0.1492380	0.193492628	2
## [616]	{whipped/sour cream}	=> {whole milk}	0.032231825	0.4496454	0.071682766	1
## [617]	{whole milk}	=> {whipped/sour cream}	0.032231825	0.1261441	0.255516014	1
## [618]	{pip fruit}	=> {pastry}	0.010676157	0.1411290	0.075648195	1

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## [619] {pastry}          => {pip fruit}          0.010676157 0.1200000 0.088967972 1
## [620] {pip fruit}       => {citrus fruit}        0.013828165 0.1827957 0.075648195 2
## [621] {citrus fruit}     => {pip fruit}          0.013828165 0.1670762 0.082765633 2
## [622] {pip fruit}       => {shopping bags}      0.009354347 0.1236559 0.075648195 1
## [623] {pip fruit}       => {sausage}            0.010777834 0.1424731 0.075648195 1
## [624] {sausage}          => {pip fruit}          0.010777834 0.1147186 0.093950178 1
## [625] {pip fruit}       => {bottled water}      0.010574479 0.1397849 0.075648195 1
## [626] {pip fruit}       => {tropical fruit}     0.020437214 0.2701613 0.075648195 2
## [627] {tropical fruit}   => {pip fruit}          0.020437214 0.1947674 0.104931368 2
## [628] {pip fruit}       => {root vegetables}    0.015556685 0.2056452 0.075648195 1
## [629] {root vegetables}  => {pip fruit}          0.015556685 0.1427239 0.108998475 1
## [630] {pip fruit}       => {soda}                0.013319776 0.1760753 0.075648195 1
## [631] {pip fruit}       => {yogurt}              0.017996950 0.2379032 0.075648195 1
## [632] {yogurt}           => {pip fruit}          0.017996950 0.1290087 0.139501779 1
## [633] {pip fruit}       => {rolls/buns}         0.013929842 0.1841398 0.075648195 1
## [634] {pip fruit}       => {other vegetables}   0.026131164 0.3454301 0.075648195 1
## [635] {other vegetables}=> {pip fruit}          0.026131164 0.1350499 0.193492628 1
## [636] {pip fruit}       => {whole milk}          0.030096594 0.3978495 0.075648195 1
## [637] {whole milk}       => {pip fruit}          0.030096594 0.1177875 0.255516014 1
## [638] {pastry}           => {citrus fruit}        0.009761057 0.1097143 0.088967972 1
## [639] {citrus fruit}     => {pastry}              0.009761057 0.1179361 0.082765633 1
## [640] {pastry}           => {shopping bags}      0.011896289 0.1337143 0.088967972 1
## [641] {shopping bags}    => {pastry}              0.011896289 0.1207430 0.098525674 1
## [642] {pastry}           => {sausage}             0.012506355 0.1405714 0.088967972 1
## [643] {sausage}          => {pastry}              0.012506355 0.1331169 0.093950178 1
## [644] {pastry}           => {bottled water}       0.008947636 0.1005714 0.088967972 0
## [645] {pastry}           => {tropical fruit}     0.013218099 0.1485714 0.088967972 1
## [646] {tropical fruit}   => {pastry}              0.013218099 0.1259690 0.104931368 1
## [647] {pastry}           => {root vegetables}    0.010981190 0.1234286 0.088967972 1
## [648] {root vegetables}  => {pastry}              0.010981190 0.1007463 0.108998475 1
## [649] {pastry}           => {soda}                0.021047280 0.2365714 0.088967972 1
## [650] {soda}              => {pastry}              0.021047280 0.1206997 0.174377224 1
## [651] {pastry}           => {yogurt}              0.017691917 0.1988571 0.088967972 1
## [652] {yogurt}            => {pastry}              0.017691917 0.1268222 0.139501779 1
## [653] {pastry}           => {rolls/buns}         0.020945602 0.2354286 0.088967972 1
## [654] {rolls/buns}        => {pastry}              0.020945602 0.1138751 0.183934926 1
## [655] {pastry}           => {other vegetables}   0.022572445 0.2537143 0.088967972 1
## [656] {other vegetables}=> {pastry}              0.022572445 0.1166579 0.193492628 1
## [657] {pastry}           => {whole milk}          0.033248602 0.3737143 0.088967972 1
## [658] {whole milk}        => {pastry}              0.033248602 0.1301234 0.255516014 1
## [659] {citrus fruit}      => {shopping bags}      0.009761057 0.1179361 0.082765633 1
## [660] {citrus fruit}      => {sausage}             0.011286223 0.1363636 0.082765633 1
## [661] {sausage}           => {citrus fruit}        0.011286223 0.1201299 0.093950178 1
## [662] {citrus fruit}      => {bottled water}       0.013523132 0.1633907 0.082765633 1
## [663] {bottled water}     => {citrus fruit}        0.013523132 0.1223551 0.110523640 1
## [664] {citrus fruit}      => {tropical fruit}     0.019928826 0.2407862 0.082765633 2
## [665] {tropical fruit}    => {citrus fruit}        0.019928826 0.1899225 0.104931368 2
## [666] {citrus fruit}      => {root vegetables}    0.017691917 0.2137592 0.082765633 1
## [667] {root vegetables}   => {citrus fruit}        0.017691917 0.1623134 0.108998475 1
## [668] {citrus fruit}      => {soda}                0.012811388 0.1547912 0.082765633 0
## [669] {citrus fruit}      => {yogurt}              0.021657346 0.2616708 0.082765633 1
## [670] {yogurt}             => {citrus fruit}        0.021657346 0.1552478 0.139501779 1
## [671] {citrus fruit}      => {rolls/buns}         0.016776817 0.2027027 0.082765633 1
## [672] {citrus fruit}      => {other vegetables}   0.028876462 0.3488943 0.082765633 1

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## [673] {other vegetables} => {citrus fruit} 0.028876462 0.1492380 0.193492628 1
## [674] {citrus fruit} => {whole milk} 0.030503305 0.3685504 0.082765633 1
## [675] {whole milk} => {citrus fruit} 0.030503305 0.1193792 0.255516014 1
## [676] {shopping bags} => {sausage} 0.015658363 0.1589267 0.098525674 1
## [677] {sausage} => {shopping bags} 0.015658363 0.1666667 0.093950178 1
## [678] {shopping bags} => {bottled water} 0.010981190 0.1114551 0.098525674 1
## [679] {shopping bags} => {tropical fruit} 0.013523132 0.1372549 0.098525674 1
## [680] {tropical fruit} => {shopping bags} 0.013523132 0.1288760 0.104931368 1
## [681] {shopping bags} => {root vegetables} 0.012811388 0.1300310 0.098525674 1
## [682] {root vegetables} => {shopping bags} 0.012811388 0.1175373 0.108998475 1
## [683] {shopping bags} => {soda} 0.024605999 0.2497420 0.098525674 1
## [684] {soda} => {shopping bags} 0.024605999 0.1411079 0.174377224 1
## [685] {shopping bags} => {yogurt} 0.015251652 0.1547988 0.098525674 1
## [686] {yogurt} => {shopping bags} 0.015251652 0.1093294 0.139501779 1
## [687] {shopping bags} => {rolls/buns} 0.019522115 0.1981424 0.098525674 1
## [688] {rolls/buns} => {shopping bags} 0.019522115 0.1061360 0.183934926 1
## [689] {shopping bags} => {other vegetables} 0.023182511 0.2352941 0.098525674 1
## [690] {other vegetables} => {shopping bags} 0.023182511 0.1198108 0.193492628 1
## [691] {shopping bags} => {whole milk} 0.024504321 0.2487100 0.098525674 0
## [692] {sausage} => {bottled water} 0.011997966 0.1277056 0.093950178 1
## [693] {bottled water} => {sausage} 0.011997966 0.1085557 0.110523640 1
## [694] {sausage} => {tropical fruit} 0.013929842 0.1482684 0.093950178 1
## [695] {tropical fruit} => {sausage} 0.013929842 0.1327519 0.104931368 1
## [696] {sausage} => {root vegetables} 0.014946619 0.1590909 0.093950178 1
## [697] {root vegetables} => {sausage} 0.014946619 0.1371269 0.108998475 1
## [698] {sausage} => {soda} 0.024300966 0.2586580 0.093950178 1
## [699] {soda} => {sausage} 0.024300966 0.1393586 0.174377224 1
## [700] {sausage} => {yogurt} 0.019623793 0.2088745 0.093950178 1
## [701] {yogurt} => {sausage} 0.019623793 0.1406706 0.139501779 1
## [702] {sausage} => {rolls/buns} 0.030604982 0.3257576 0.093950178 1
## [703] {rolls/buns} => {sausage} 0.030604982 0.1663903 0.183934926 1
## [704] {sausage} => {other vegetables} 0.026944586 0.2867965 0.093950178 1
## [705] {other vegetables} => {sausage} 0.026944586 0.1392538 0.193492628 1
## [706] {sausage} => {whole milk} 0.029893238 0.3181818 0.093950178 1
## [707] {whole milk} => {sausage} 0.029893238 0.1169916 0.255516014 1
## [708] {bottled water} => {tropical fruit} 0.018505338 0.1674333 0.110523640 1
## [709] {tropical fruit} => {bottled water} 0.018505338 0.1763566 0.104931368 1
## [710] {bottled water} => {root vegetables} 0.015658363 0.1416743 0.110523640 1
## [711] {root vegetables} => {bottled water} 0.015658363 0.1436567 0.108998475 1
## [712] {bottled water} => {soda} 0.028978139 0.2621895 0.110523640 1
## [713] {soda} => {bottled water} 0.028978139 0.1661808 0.174377224 1
## [714] {bottled water} => {yogurt} 0.022979156 0.2079117 0.110523640 1
## [715] {yogurt} => {bottled water} 0.022979156 0.1647230 0.139501779 1
## [716] {bottled water} => {rolls/buns} 0.024199288 0.2189512 0.110523640 1
## [717] {rolls/buns} => {bottled water} 0.024199288 0.1315644 0.183934926 1
## [718] {bottled water} => {other vegetables} 0.024809354 0.2244710 0.110523640 1
## [719] {other vegetables} => {bottled water} 0.024809354 0.1282186 0.193492628 1
## [720] {bottled water} => {whole milk} 0.034367056 0.3109476 0.110523640 1
## [721] {whole milk} => {bottled water} 0.034367056 0.1345006 0.255516014 1
## [722] {tropical fruit} => {root vegetables} 0.021047280 0.2005814 0.104931368 1
## [723] {root vegetables} => {tropical fruit} 0.021047280 0.1930970 0.108998475 1
## [724] {tropical fruit} => {soda} 0.020843925 0.1986434 0.104931368 1
## [725] {soda} => {tropical fruit} 0.020843925 0.1195335 0.174377224 1
## [726] {tropical fruit} => {yogurt} 0.029283172 0.2790698 0.104931368 2

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## [727] {yogurt}                                     => {tropical fruit}          0.029283172 0.2099125 0.139501779 2
## [728] {tropical fruit}                         => {rolls/buns}            0.024605999 0.2344961 0.104931368 1
## [729] {rolls/buns}                            => {tropical fruit}          0.024605999 0.1337756 0.183934926 1
## [730] {tropical fruit}                         => {other vegetables}       0.035892222 0.3420543 0.104931368 1
## [731] {other vegetables}                      => {tropical fruit}          0.035892222 0.1854966 0.193492628 1
## [732] {tropical fruit}                         => {whole milk}             0.042297916 0.4031008 0.104931368 1
## [733] {whole milk}                            => {tropical fruit}          0.042297916 0.1655392 0.255516014 1
## [734] {root vegetables}                      => {soda}                   0.018607016 0.1707090 0.108998475 0
## [735] {soda}                                 => {root vegetables}        0.018607016 0.1067055 0.174377224 0
## [736] {root vegetables}                      => {yogurt}                 0.025826131 0.2369403 0.108998475 1
## [737] {yogurt}                               => {root vegetables}        0.025826131 0.1851312 0.139501779 1
## [738] {root vegetables}                      => {rolls/buns}            0.024300966 0.2229478 0.108998475 1
## [739] {rolls/buns}                           => {root vegetables}        0.024300966 0.1321172 0.183934926 1
## [740] {root vegetables}                      => {other vegetables}       0.047381800 0.4347015 0.108998475 2
## [741] {other vegetables}                     => {root vegetables}        0.047381800 0.2448765 0.193492628 2
## [742] {root vegetables}                      => {whole milk}             0.048906965 0.4486940 0.108998475 1
## [743] {whole milk}                           => {root vegetables}        0.048906965 0.1914047 0.255516014 1
## [744] {soda}                                => {yogurt}                 0.027351296 0.1568513 0.174377224 1
## [745] {yogurt}                             => {soda}                   0.027351296 0.1960641 0.139501779 1
## [746] {soda}                                => {rolls/buns}            0.038332486 0.2198251 0.174377224 1
## [747] {rolls/buns}                          => {soda}                   0.038332486 0.2084024 0.183934926 1
## [748] {soda}                                => {other vegetables}       0.032740214 0.1877551 0.174377224 0
## [749] {other vegetables}                    => {soda}                   0.032740214 0.1692065 0.193492628 0
## [750] {soda}                                => {whole milk}             0.040061007 0.2297376 0.174377224 0
## [751] {whole milk}                          => {soda}                   0.040061007 0.1567847 0.255516014 0
## [752] {yogurt}                             => {rolls/buns}            0.034367056 0.2463557 0.139501779 1
## [753] {rolls/buns}                          => {yogurt}                 0.034367056 0.1868436 0.183934926 1
## [754] {yogurt}                            => {other vegetables}       0.043416370 0.3112245 0.139501779 1
## [755] {other vegetables}                   => {yogurt}                 0.043416370 0.2243826 0.193492628 1
## [756] {yogurt}                            => {whole milk}             0.056024403 0.4016035 0.139501779 1
## [757] {whole milk}                         => {yogurt}                 0.056024403 0.2192598 0.255516014 1
## [758] {rolls/buns}                        => {other vegetables}       0.042602949 0.2316197 0.183934926 1
## [759] {other vegetables}                  => {rolls/buns}            0.042602949 0.2201787 0.193492628 1
## [760] {rolls/buns}                        => {whole milk}             0.056634469 0.3079049 0.183934926 1
## [761] {whole milk}                         => {rolls/buns}            0.056634469 0.2216474 0.255516014 1
## [762] {other vegetables}                  => {whole milk}             0.074834774 0.3867578 0.193492628 1
## [763] {whole milk}                         => {other vegetables}       0.074834774 0.2928770 0.255516014 1
## [764] {oil, other vegetables}              => {whole milk}             0.005083884 0.5102041 0.009964413 1
## [765] {oil, whole milk}                   => {other vegetables}       0.005083884 0.4504505 0.011286223 2
## [766] {onions, root vegetables}           => {other vegetables}       0.005693950 0.6021505 0.009456024 3
## [767] {onions, other vegetables}          => {root vegetables}        0.005693950 0.4000000 0.014234875 3
## [768] {other vegetables, root vegetables} => {onions}                 0.005693950 0.1201717 0.047381800 3
## [769] {onions, other vegetables}          => {whole milk}             0.006609049 0.4642857 0.014234875 1
## [770] {onions, whole milk}                => {other vegetables}       0.006609049 0.5462185 0.012099644 2
## [771] {hamburger meat, other vegetables}  => {whole milk}             0.006304016 0.4558824 0.013828165 1
## [772] {hamburger meat, }

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##	whole milk}	=> {other vegetables}	0.006304016	0.4275862	0.014743264	2
## [773]	{hygiene articles, other vegetables}	=> {whole milk}	0.005185562	0.5425532	0.009557702	2
## [774]	{hygiene articles, whole milk}	=> {other vegetables}	0.005185562	0.4047619	0.012811388	2
## [775]	{other vegetables, sugar}	=> {whole milk}	0.006304016	0.5849057	0.010777834	2
## [776]	{sugar, whole milk}	=> {other vegetables}	0.006304016	0.4189189	0.015048297	2
## [777]	{long life bakery product, other vegetables}	=> {whole milk}	0.005693950	0.5333333	0.010676157	2
## [778]	{long life bakery product, whole milk}	=> {other vegetables}	0.005693950	0.4210526	0.013523132	2
## [779]	{cream cheese, yogurt}	=> {other vegetables}	0.005287239	0.4262295	0.012404677	2
## [780]	{cream cheese, other vegetables}	=> {yogurt}	0.005287239	0.3851852	0.013726487	2
## [781]	{other vegetables, yogurt}	=> {cream cheese}	0.005287239	0.1217799	0.043416370	3
## [782]	{cream cheese, yogurt}	=> {whole milk}	0.006609049	0.5327869	0.012404677	2
## [783]	{cream cheese, whole milk}	=> {yogurt}	0.006609049	0.4012346	0.016471784	2
## [784]	{whole milk, yogurt}	=> {cream cheese}	0.006609049	0.1179673	0.056024403	2
## [785]	{cream cheese, other vegetables}	=> {whole milk}	0.006710727	0.4888889	0.013726487	1
## [786]	{cream cheese, whole milk}	=> {other vegetables}	0.006710727	0.4074074	0.016471784	2
## [787]	{chicken, root vegetables}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
## [788]	{chicken, other vegetables}	=> {root vegetables}	0.005693950	0.3181818	0.017895272	2
## [789]	{other vegetables, root vegetables}	=> {chicken}	0.005693950	0.1201717	0.047381800	2
## [790]	{chicken, root vegetables}	=> {whole milk}	0.005998983	0.5514019	0.010879512	2
## [791]	{chicken, whole milk}	=> {root vegetables}	0.005998983	0.3410405	0.017590239	3
## [792]	{root vegetables, whole milk}	=> {chicken}	0.005998983	0.1226611	0.048906965	2
## [793]	{chicken, rolls/buns}	=> {whole milk}	0.005287239	0.5473684	0.009659380	2
## [794]	{chicken, whole milk}	=> {rolls/buns}	0.005287239	0.3005780	0.017590239	1
## [795]	{chicken, other vegetables}	=> {whole milk}	0.008439248	0.4715909	0.017895272	1
## [796]	{chicken, whole milk}	=> {other vegetables}	0.008439248	0.4797688	0.017590239	2
## [797]	{other vegetables, whole milk}	=> {chicken}	0.008439248	0.1127717	0.074834774	2
## [798]	{other vegetables, white bread}	=> {whole milk}	0.005897306	0.4296296	0.013726487	1
## [799]	{white bread,					

##	whole milk}	=> {other vegetables}	0.005897306	0.3452381	0.017081851	1
## [800]	{chocolate, soda}	=> {whole milk}	0.005083884	0.3759398	0.013523132	1
## [801]	{chocolate, whole milk}	=> {soda}	0.005083884	0.3048780	0.016675140	1
## [802]	{soda, whole milk}	=> {chocolate}	0.005083884	0.1269036	0.040061007	2
## [803]	{chocolate, other vegetables}	=> {whole milk}	0.005490595	0.4320000	0.012709710	1
## [804]	{chocolate, whole milk}	=> {other vegetables}	0.005490595	0.3292683	0.016675140	1
## [805]	{coffee, yogurt}	=> {whole milk}	0.005083884	0.5208333	0.009761057	2
## [806]	{coffee, whole milk}	=> {yogurt}	0.005083884	0.2717391	0.018708693	1
## [807]	{coffee, other vegetables}	=> {whole milk}	0.006405694	0.4772727	0.013421454	1
## [808]	{coffee, whole milk}	=> {other vegetables}	0.006405694	0.3423913	0.018708693	1
## [809]	{frozen vegetables, root vegetables}	=> {other vegetables}	0.006100661	0.5263158	0.011591256	2
## [810]	{frozen vegetables, other vegetables}	=> {root vegetables}	0.006100661	0.3428571	0.017793594	3
## [811]	{other vegetables, root vegetables}	=> {frozen vegetables}	0.006100661	0.1287554	0.047381800	2
## [812]	{frozen vegetables, root vegetables}	=> {whole milk}	0.006202339	0.5350877	0.011591256	2
## [813]	{frozen vegetables, whole milk}	=> {root vegetables}	0.006202339	0.3034826	0.020437214	2
## [814]	{root vegetables, whole milk}	=> {frozen vegetables}	0.006202339	0.1268191	0.048906965	2
## [815]	{frozen vegetables, yogurt}	=> {other vegetables}	0.005287239	0.4262295	0.012404677	2
## [816]	{frozen vegetables, other vegetables}	=> {yogurt}	0.005287239	0.2971429	0.017793594	2
## [817]	{other vegetables, yogurt}	=> {frozen vegetables}	0.005287239	0.1217799	0.043416370	2
## [818]	{frozen vegetables, yogurt}	=> {whole milk}	0.006100661	0.4918033	0.012404677	1
## [819]	{frozen vegetables, whole milk}	=> {yogurt}	0.006100661	0.2985075	0.020437214	2
## [820]	{whole milk, yogurt}	=> {frozen vegetables}	0.006100661	0.1088929	0.056024403	2
## [821]	{frozen vegetables, rolls/buns}	=> {whole milk}	0.005083884	0.5000000	0.010167768	1
## [822]	{frozen vegetables, whole milk}	=> {rolls/buns}	0.005083884	0.2487562	0.020437214	1
## [823]	{frozen vegetables, other vegetables}	=> {whole milk}	0.009659380	0.5428571	0.017793594	2
## [824]	{frozen vegetables, whole milk}	=> {other vegetables}	0.009659380	0.4726368	0.020437214	2
## [825]	{other vegetables, whole milk}	=> {frozen vegetables}	0.009659380	0.1290761	0.074834774	2
## [826]	{beef,					

##	root vegetables}	=> {other vegetables}	0.007930859	0.4561404	0.017386884	2	
## [827]	{beef,	=> {root vegetables}	0.007930859	0.4020619	0.019725470	3	
##	other vegetables}	=> {beef}	0.007930859	0.1673820	0.047381800	3	
## [828]	{other vegetables,	=> {whole milk}	0.008032537	0.4619883	0.017386884	1	
##	root vegetables}	=> {root vegetables}	0.008032537	0.3779904	0.021250635	3	
## [829]	{beef,	=> {beef}	0.008032537	0.1642412	0.048906965	3	
##	root vegetables}	=> {other vegetables}	0.005185562	0.4434783	0.011692933	2	
## [830]	{beef,	=> {yogurt}	0.005185562	0.2628866	0.019725470	1	
##	whole milk}	=> {beef}	0.005185562	0.1194379	0.043416370	2	
## [831]	{root vegetables,	=> {whole milk}	0.006100661	0.5217391	0.011692933	2	
##	whole milk}	=> {yogurt}	0.006100661	0.2870813	0.021250635	2	
## [832]	{beef,	=> {beef}	0.006100661	0.1088929	0.056024403	2	
##	yogurt}	=> {whole milk}	0.005795628	0.4253731	0.013624809	2	
## [833]	{beef,	=> {rolls/buns}	0.005795628	0.2938144	0.019725470	1	
##	other vegetables}	=> {beef}	0.005795628	0.1360382	0.042602949	2	
## [834]	{other vegetables,	=> {rolls/buns}	0.006812405	0.5000000	0.013624809	1	
##	yogurt}	=> {whole milk}	0.006812405	0.3205742	0.021250635	1	
## [835]	{beef,	=> {rolls/buns}	0.006812405	0.1202873	0.056634469	2	
##	yogurt}	=> {beef}	0.009252669	0.4690722	0.019725470	1	
## [836]	{beef,	=> {whole milk}	0.009252669	0.4354067	0.021250635	2	
##	whole milk}	=> {other vegetables}	0.009252669	0.1236413	0.074834774	2	
## [837]	{whole milk,	=> {beef}	0.005897306	0.5631068	0.010472801	2	
##	yogurt}	=> {whole milk}	0.005897306	0.2256809	0.026131164	3	
## [838]	{beef,	=> {whipped/sour cream}	0.005897306	0.1829653	0.032231825	3	
##	rolls/buns}	=> {curd}	0.005897306	0.005287239	0.5148515	0.010269446	3
## [839]	{beef,	=> {tropical fruit}	0.005897306	0.005287239	0.3058824	0.017285206	2
##	other vegetables}	=> {yogurt}	0.005897306	0.005287239	0.1805556	0.029283172	3
## [840]	{other vegetables,	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	rolls/buns}	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [841]	{beef,	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	rolls/buns}	=> {rolls/buns}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [842]	{beef,	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {rolls/buns}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [843]	{rolls/buns,	=> {beef}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [844]	{beef,	=> {beef}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	other vegetables}	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [845]	{beef,	=> {other vegetables}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {beef}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [846]	{other vegetables,	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [847]	{curd,	=> {whipped/sour cream}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whipped/sour cream}	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [848]	{curd,	=> {whole milk}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {whipped/sour cream}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [849]	{whipped/sour cream,	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	whole milk}	=> {tropical fruit}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [850]	{curd,	=> {yogurt}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	tropical fruit}	=> {tropical fruit}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [851]	{curd,	=> {yogurt}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	yogurt}	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [852]	{tropical fruit,	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
##	yogurt}	=> {curd}	0.005897306	0.005287239	0.005287239	0.005287239	0
## [853]	{curd,		0.005897306	0.005287239	0.005287239	0.005287239	0

##	tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446	2
## [854]	{curd,	=> {tropical fruit}	0.005287239	0.3076923	0.017183528	2
## [855]	other vegetables}	=> {curd}	0.005287239	0.1473088	0.035892222	2
## [856]	{other vegetables,	=> {whole milk}	0.006507372	0.6336634	0.010269446	2
## [857]	tropical fruit}	=> {tropical fruit}	0.006507372	0.2490272	0.026131164	2
## [858]	{curd,	=> {curd}	0.006507372	0.1538462	0.042297916	2
## [859]	whole milk}	=> {other vegetables}	0.005490595	0.5046729	0.010879512	2
## [860]	{tropical fruit,	=> {root vegetables}	0.005490595	0.3195266	0.017183528	2
## [861]	whole milk}	=> {curd}	0.005490595	0.1158798	0.047381800	2
## [862]	{curd,	=> {whole milk}	0.006202339	0.5700935	0.010879512	2
## [863]	root vegetables}	=> {root vegetables}	0.006202339	0.2373541	0.026131164	2
## [864]	{curd,	=> {curd}	0.006202339	0.1268191	0.048906965	2
## [865]	whole milk}	=> {other vegetables}	0.006100661	0.3529412	0.017285206	1
## [866]	{curd,	=> {yogurt}	0.006100661	0.3550296	0.017183528	2
## [867]	other vegetables}	=> {curd}	0.006100661	0.1405152	0.043416370	2
## [868]	{other vegetables,	=> {whole milk}	0.010066090	0.5823529	0.017285206	2
## [869]	yogurt}	=> {yogurt}	0.010066090	0.3852140	0.026131164	2
## [870]	{curd,	=> {whole milk}	0.010066090	0.1796733	0.056024403	3
## [871]	rolls/buns}	=> {curd}	0.005897306	0.5858586	0.010066090	2
## [872]	{curd,	=> {whole milk}	0.005897306	0.2256809	0.026131164	1
## [873]	whole milk}	=> {rolls/buns}	0.005897306	0.1041293	0.056634469	1
## [874]	{curd,	=> {curd}	0.009862735	0.5739645	0.017183528	2
## [875]	other vegetables}	=> {whole milk}	0.009862735	0.3774319	0.026131164	1
## [876]	{curd,	=> {other vegetables}	0.009862735	0.4958678	0.012302999	1
## [877]	whole milk}	=> {curd}	0.009862735	0.1317935	0.074834774	2
## [878]	{other vegetables,	=> {whole milk}	0.006100661	0.3092784	0.019725470	2
## [879]	whole milk}	=> {yogurt}	0.006100661	0.1088929	0.056024403	2
## [880]	{whole milk,	=> {napkins}	0.006100661	0.1088929	0.056024403	2

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##      rolls/buns}          => {whole milk}          0.005287239 0.4521739 0.011692933 1
## [881] {napkins,           => {rolls/buns}          0.005287239 0.2680412 0.019725470 1
##      whole milk}          => {whole milk}          0.006812405 0.4718310 0.014438231 1
## [882] {napkins,           => {whole milk}          0.006812405 0.3453608 0.019725470 1
##      other vegetables}    => {other vegetables} 0.006812405 0.5149254 0.013624809 2
## [883] {napkins,           => {other vegetables} 0.007015760 0.3239437 0.021657346 2
##      whole milk}          => {root vegetables} 0.007015760 0.1480687 0.047381800 2
## [884] {pork,               => {root vegetables} 0.007015760 0.5000000 0.013624809 1
##      root vegetables}    => {pork}                 0.006812405 0.3073394 0.022165735 2
## [885] {other vegetables, => {pork}                 0.006812405 0.1392931 0.048906965 2
##      pork}                => {whole milk}          0.005592272 0.4954955 0.011286223 2
## [886] {other vegetables, => {whole milk}          0.005592272 0.2582160 0.021657346 1
##      root vegetables}    => {pork}                 0.005592272 0.1312649 0.042602949 2
## [887] {pork,               => {other vegetables} 0.006202339 0.5495495 0.011286223 2
##      root vegetables}    => {rolls/buns}          0.006202339 0.2798165 0.022165735 1
## [888] {pork,               => {rolls/buns}          0.006202339 0.1095153 0.056634469 1
##      whole milk}          => {pork}                 0.006202339 0.4694836 0.021657346 1
## [889] {root vegetables,  => {pork}                 0.006202339 0.4587156 0.022165735 2
##      whole milk}          => {whole milk}          0.005185562 0.1358696 0.074834774 2
## [890] {pork,               => {other vegetables} 0.005185562 0.5483871 0.009456024 2
##      rolls/buns}          => {whole milk}          0.005185562 0.2524752 0.020538892 2
## [891] {other vegetables, => {frankfurter}         0.005185562 0.1225962 0.042297916 2
##      pork}                => {tropical fruit}   0.005083884 0.5000000 0.010167768 1
## [892] {other vegetables, => {frankfurter}         0.005083884 0.2475248 0.020538892 2
##      rolls/buns}          => {whole milk}          0.005083884 0.1039501 0.048906965 1
## [893] {pork,               => {frankfurter}         0.005083884 0.5545455 0.011184545 2
##      rolls/buns}          => {whole milk}          0.006202339 0.3019802 0.020538892 2
## [894] {pork,               => {yogurt}              0.006202339 0.4545455 0.011184545 2
##      whole milk}          => {whole milk}          0.006202339 0.20538892 0
## [895] {rolls/buns,         => {whole milk}          0.006202339 0.1039501 0.048906965 1
##      whole milk}          => {pork}                 0.005083884 0.5545455 0.011184545 2
## [896] {other vegetables, => {whole milk}          0.005083884 0.20538892 0
##      pork}                => {root vegetables} 0.005083884 0.1039501 0.048906965 1
## [897] {pork,               => {other vegetables} 0.005083884 0.5545455 0.011184545 2
##      whole milk}          => {pork}                 0.005083884 0.20538892 0
## [898] {other vegetables, => {pork}                 0.005083884 0.1039501 0.048906965 1
##      whole milk}          => {whole milk}          0.005083884 0.5545455 0.011184545 2
## [899] {frankfurter,        => {whole milk}          0.005083884 0.20538892 0
##      tropical fruit}     => {frankfurter}         0.005083884 0.1039501 0.048906965 1
## [900] {frankfurter,        => {whole milk}          0.005083884 0.5545455 0.011184545 2
##      whole milk}          => {tropical fruit}   0.005083884 0.20538892 0
## [901] {tropical fruit,    => {frankfurter}         0.005083884 0.1039501 0.048906965 1
##      whole milk}          => {whole milk}          0.005083884 0.5545455 0.011184545 2
## [902] {frankfurter,        => {whole milk}          0.005083884 0.20538892 0
##      root vegetables}    => {frankfurter}         0.005083884 0.1039501 0.048906965 1
## [903] {frankfurter,        => {root vegetables} 0.005083884 0.5545455 0.011184545 2
##      whole milk}          => {frankfurter}         0.005083884 0.20538892 0
## [904] {root vegetables,   => {frankfurter}         0.005083884 0.1039501 0.048906965 1
##      whole milk}          => {whole milk}          0.005083884 0.5545455 0.011184545 2
## [905] {frankfurter,        => {whole milk}          0.005083884 0.20538892 0
##      yogurt}              => {whole milk}          0.005083884 0.1039501 0.048906965 1
## [906] {frankfurter,        => {yogurt}              0.005083884 0.5545455 0.011184545 2
##      whole milk}          => {whole milk}          0.005083884 0.20538892 0
## [907] {whole milk,          => {yogurt}              0.005083884 0.1039501 0.048906965 1
##      whole milk}

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##      yogurt}          => {frankfurter}          0.006202339 0.1107078 0.056024403 1
## [908] {frankfurter,    => {other vegetables} 0.005592272 0.2910053 0.019217082 1
##      rolls/buns}       => {rolls/buns}        0.005592272 0.3395062 0.016471784 1
## [909] {frankfurter,    => {frankfurter}         0.005592272 0.1312649 0.042602949 2
##      other vegetables} => {whole milk}          0.005998983 0.3121693 0.019217082 1
## [910] {other vegetables, => {rolls/buns}        0.005998983 0.2920792 0.020538892 1
##      rolls/buns}        => {frankfurter}          0.005998983 0.1059246 0.056634469 1
## [911] {frankfurter,    => {whole milk}          0.007625826 0.4629630 0.016471784 1
##      rolls/buns}        => {other vegetables} 0.007625826 0.3712871 0.020538892 1
## [912] {frankfurter,    => {frankfurter}          0.007625826 0.1019022 0.074834774 1
##      whole milk}        => {rolls/buns}        0.005083884 0.3225806 0.015760041 1
## [913] {rolls/buns,     => {frankfurter}          0.005083884 0.2994012 0.016980173 2
##      whole milk}        => {whole milk}          0.005083884 0.1754386 0.028978139 2
## [914] {frankfurter,    => {frankfurter}          0.006100661 0.3870968 0.015760041 1
##      other vegetables} => {whole milk}          0.006100661 0.2985075 0.020437214 2
## [915] {frankfurter,    => {frankfurter}          0.006100661 0.1775148 0.034367056 2
##      whole milk}        => {whole milk}          0.005185562 0.5604396 0.009252669 2
## [916] {other vegetables, => {bottled beer}        0.005185562 0.2537313 0.020437214 1
##      whole milk}        => {bottled water}       0.005388917 0.3955224 0.013624809 1
## [917] {bottled beer,    => {bottled water}       0.005388917 0.2636816 0.020437214 1
##      bottled water}     => {whole milk}          0.007625826 0.4716981 0.016166751 1
## [918] {bottled beer,    => {whole milk}          0.007625826 0.3731343 0.020437214 1
##      soda}               => {other vegetables} 0.007625826 0.1019022 0.074834774 1
## [919] {bottled water,   => {bottled beer}         0.007625826 0.1019022 0.074834774 1
##      soda}               => {whole milk}          0.005693950 0.5333333 0.010676157 2
## [920] {bottled beer,    => {whole milk}          0.005693950 0.2258065 0.025216065 2
##      bottled water}     => {bottled water}       0.005693950 0.1346154 0.042297916 2
## [921] {bottled beer,    => {bottled beer}         0.005693950 0.5600000 0.010167768 2
##      whole milk}        => {bottled beer}         0.005693950 0.1019022 0.074834774 1
## [922] {bottled water,   => {bottled beer}         0.005693950 0.1019022 0.074834774 1
##      whole milk}        => {whole milk}          0.005693950 0.2537313 0.020437214 1
## [923] {bottled beer,    => {whole milk}          0.005693950 0.2537313 0.020437214 1
##      yogurt}              => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [924] {bottled beer,    => {yogurt}                0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {bottled beer}        0.005693950 0.1019022 0.074834774 1
## [925] {bottled beer,    => {whole milk}          0.005693950 0.1019022 0.074834774 1
##      rolls/buns}          => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [926] {bottled beer,    => {rolls/buns}         0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {bottled beer}        0.005693950 0.1019022 0.074834774 1
## [927] {bottled beer,    => {whole milk}          0.005693950 0.1019022 0.074834774 1
##      other vegetables}   => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [928] {bottled beer,    => {other vegetables} 0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {bottled beer}        0.005693950 0.1019022 0.074834774 1
## [929] {other vegetables, => {bottled beer}        0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [930] {brown bread,     => {whole milk}          0.005693950 0.1019022 0.074834774 1
##      tropical fruit}     => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [931] {brown bread,     => {tropical fruit}      0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {brown bread}        0.005693950 0.1019022 0.074834774 1
## [932] {tropical fruit, => {brown bread}        0.005693950 0.1019022 0.074834774 1
##      whole milk}         => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [933] {brown bread,     => {root vegetables} 0.005693950 0.1019022 0.074834774 1
##      root vegetables}   => {whole milk}          0.005693950 0.1019022 0.074834774 1
## [934] {brown bread,

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##      whole milk}          => {root vegetables}    0.005693950  0.2258065  0.025216065  2
## [935] {root vegetables,   => {brown bread}       0.005693950  0.1164241  0.048906965  1
##      whole milk}          => {whole milk}        0.005083884  0.4032258  0.012608033  1
## [936] {brown bread,      => {soda}             0.005083884  0.2016129  0.025216065  1
##      soda}                => {brown bread}     0.005083884  0.1269036  0.040061007  1
## [937] {brown bread,      => {whole milk}       0.005185562  0.3566434  0.014539908  1
##      whole milk}          => {soda}             0.005185562  0.2771739  0.018708693  1
## [938] {soda,              => {other vegetables} 0.005185562  0.1194379  0.043416370  1
##      whole milk}          => {yogurt}           0.005185562  0.007117438  0.4895105  0.014539908  1
## [939] {brown bread,      => {brown bread}      0.005185562  0.2822581  0.025216065  2
##      yogurt}               => {whole milk}       0.005185562  0.007117438  0.5000000  0.018708693  1
## [940] {brown bread,      => {yogurt}            0.005185562  0.1270417  0.056024403  1
##      other vegetables}    => {brown bread}     0.005185562  0.005287239  0.4193548  0.012608033  1
## [941] {other vegetables, => {whole milk}       0.005185562  0.2096774  0.025216065  1
##      yogurt}               => {rolls/buns}      0.005185562  0.009354347  0.6219512  0.008337570  2
## [942] {brown bread,      => {whole milk}       0.005185562  0.2142857  0.024199288  3
##      yogurt}               => {rolls/buns}      0.005185562  0.005897306  0.5321101  0.011082867  2
## [943] {brown bread,      => {whole milk}       0.005185562  0.1728814  0.029994916  2
##      whole milk}          => {other vegetables} 0.005185562  0.005897306  0.2989691  0.019725470  2
## [944] {whole milk,       => {brown bread}      0.005185562  0.1244635  0.047381800  2
##      yogurt}               => {whole milk}       0.005185562  0.005693950  0.4000000  0.014234875  2
## [945] {brown bread,      => {margarine}        0.005185562  0.2886598  0.019725470  2
##      rolls/buns}          => {other vegetables} 0.005185562  0.005693950  0.1311475  0.043416370  2
## [946] {brown bread,      => {margarine}        0.005185562  0.007015760  0.4928571  0.014234875  1
##      whole milk}          => {yogurt}           0.005185562  0.007015760  0.2899160  0.024199288  2
## [947] {brown bread,      => {margarine}        0.005185562  0.005897306  0.1250000  0.074834774  1
##      other vegetables}    => {brown bread}     0.005185562  0.005897306  0.009354347  0.3709677  0.025216065  1
## [948] {brown bread,      => {whole milk}       0.005185562  0.005897306  0.009354347  0.5000000  0.018708693  1
##      whole milk}          => {other vegetables} 0.005185562  0.005897306  0.009354347  0.3709677  0.025216065  1
## [949] {other vegetables,=> {brown bread}      0.005185562  0.005897306  0.009354347  0.1250000  0.074834774  1
##      whole milk}          => {whole milk}       0.005185562  0.005897306  0.009354347  0.1250000  0.074834774  1
## [950] {domestic eggs,    => {whole milk}       0.005185562  0.005897306  0.009354347  0.6219512  0.008337570  2
##      margarine}           => {margarine}        0.005185562  0.005897306  0.005185562  0.2142857  0.024199288  3
## [951] {margarine,         => {domestic eggs}    0.005185562  0.005897306  0.005185562  0.1728814  0.029994916  2
##      whole milk}          => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.5321101  0.011082867  2
## [952] {domestic eggs,    => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.2989691  0.019725470  2
##      whole milk}          => {root vegetables} 0.005185562  0.005897306  0.005185562  0.005897306  0.1244635  0.047381800  2
## [953] {margarine,         => {root vegetables} 0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
##      root vegetables}    => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
## [954] {margarine,         => {other vegetables} 0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
##      other vegetables}   => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
## [955] {other vegetables,=> {other vegetables} 0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
##      root vegetables}   => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
## [956] {margarine,         => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
##      yogurt}              => {other vegetables} 0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4000000  0.014234875  2
## [957] {margarine,         => {yogurt}           0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.2886598  0.019725470  2
##      other vegetables}   => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.2886598  0.019725470  2
## [958] {other vegetables,=> {yogurt}           0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.1311475  0.043416370  2
##      yogurt}              => {margarine}        0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.1311475  0.043416370  2
## [959] {margarine,         => {whole milk}       0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4928571  0.014234875  1
##      yogurt}              => {yogurt}           0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.4928571  0.014234875  1
## [960] {margarine,         => {yogurt}           0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.2899160  0.024199288  2
##      whole milk}          => {yogurt}           0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.2899160  0.024199288  2
## [961] {whole milk,        => {whole milk}       0.005185562  0.005897306  0.005185562  0.005897306  0.005693950  0.2899160  0.024199288  2

```

##	yogurt}	=> {margarine}	0.007015760	0.1252269	0.056024403	2
## [962]	{margarine,	=> {other vegetables}	0.005185562	0.3517241	0.014743264	1
## [963]	rolls/buns}	=> {rolls/buns}	0.005185562	0.2628866	0.019725470	1
## [964]	{margarine,	=> {margarine}	0.005185562	0.1217184	0.042602949	2
## [965]	other vegetables}	=> {whole milk}	0.007930859	0.5379310	0.014743264	2
## [966]	{margarine,	=> {rolls/buns}	0.007930859	0.3277311	0.024199288	1
## [967]	whole milk}	=> {margarine}	0.007930859	0.1400359	0.056634469	2
## [968]	{rolls/buns,	=> {whole milk}	0.009252669	0.4690722	0.019725470	1
## [969]	whole milk}	=> {other vegetables}	0.009252669	0.3823529	0.024199288	1
## [970]	{other vegetables,	=> {margarine}	0.009252669	0.1236413	0.074834774	2
## [971]	whole milk}	=> {whole milk}	0.005998983	0.6210526	0.009659380	2
## [972]	{butter,	=> {domestic eggs}	0.005998983	0.2177122	0.027554652	3
## [973]	whole milk}	=> {butter}	0.005998983	0.2000000	0.029994916	3
## [974]	{domestic eggs,	=> {other vegetables}	0.005795628	0.5700000	0.010167768	2
## [975]	whole milk}	=> {whipped/sour cream}	0.005795628	0.2893401	0.020030503	4
## [976]	{butter,	=> {butter}	0.005795628	0.2007042	0.028876462	3
## [977]	other vegetables}	=> {whole milk}	0.006710727	0.6600000	0.010167768	2
## [978]	{whipped/sour cream}	=> {whipped/sour cream}	0.006710727	0.2435424	0.027554652	3
## [979]	{butter,	=> {butter}	0.006710727	0.2082019	0.032231825	3
## [980]	whole milk}	=> {whole milk}	0.005083884	0.5555556	0.009150991	2
## [981]	{whipped/sour cream,	=> {citrus fruit}	0.005083884	0.1845018	0.027554652	2
## [982]	whole milk}	=> {butter}	0.005083884	0.1666667	0.030503305	3
## [983]	{bottled water,	=> {whole milk}	0.005388917	0.6022727	0.008947636	2
## [984]	butter}	=> {bottled water}	0.005388917	0.1955720	0.027554652	1
## [985]	{butter,	=> {butter}	0.005388917	0.1568047	0.034367056	2
## [986]	whole milk}	=> {other vegetables}	0.005490595	0.5510204	0.009964413	2
## [987]	{tropical fruit}	=> {tropical fruit}	0.005490595	0.2741117	0.020030503	2
## [988]	{butter,	=> {other vegetables}				
	other vegetables,					

##	tropical fruit}	=> {butter}	0.005490595	0.1529745	0.035892222	2
## [989]	{butter,	=> {whole milk}	0.006202339	0.6224490	0.009964413	2
## [990]	tropical fruit}	=> {tropical fruit}	0.006202339	0.2250923	0.027554652	2
## [991]	{butter,	=> {butter}	0.006202339	0.1466346	0.042297916	2
## [992]	whole milk}	=> {other vegetables}	0.006609049	0.5118110	0.012913066	2
## [993]	{tropical fruit,	=> {root vegetables}	0.006609049	0.3299492	0.020030503	3
## [994]	whole milk}	=> {root vegetables}	0.006609049	0.1394850	0.047381800	2
## [995]	{butter,	=> {butter}	0.008235892	0.6377953	0.012913066	2
## [996]	root vegetables}	=> {whole milk}	0.008235892	0.2988930	0.027554652	2
## [997]	{butter,	=> {root vegetables}	0.008235892	0.1683992	0.048906965	3
## [998]	whole milk}	=> {butter}	0.006405694	0.4375000	0.014641586	2
## [999]	{root vegetables,	=> {other vegetables}	0.006405694	0.3197970	0.020030503	2
## [1000]	whole milk}	=> {yogurt}	0.006405694	0.1475410	0.043416370	2
## [1001]	{butter,	=> {butter}	0.009354347	0.6388889	0.014641586	2
## [1002]	yogurt}	=> {whole milk}	0.009354347	0.3394834	0.027554652	2
## [1003]	{butter,	=> {yogurt}	0.009354347	0.1669691	0.056024403	3
## [1004]	whole milk}	=> {butter}	0.005693950	0.4242424	0.013421454	2
## [1005]	{yogurt}	=> {other vegetables}	0.005693950	0.2842640	0.020030503	1
## [1006]	{butter,	=> {rolls/buns}	0.005693950	0.1336516	0.042602949	2
## [1007]	other vegetables}	=> {butter}	0.006609049	0.4924242	0.013421454	1
## [1008]	{rolls/buns}	=> {whole milk}	0.006609049	0.2398524	0.027554652	1
## [1009]	{butter,	=> {rolls/buns}	0.006609049	0.1166966	0.056634469	2
## [1010]	whole milk}	=> {butter}	0.011489578	0.5736041	0.020030503	2
## [1011]	{butter,	=> {whole milk}	0.011489578	0.4169742	0.027554652	2
## [1012]	other vegetables}	=> {other vegetables}	0.011489578	0.1535326	0.074834774	2
## [1013]	{whole milk}	=> {butter}	0.005083884	0.4310345	0.011794611	1
## [1014]	{newspapers,	=> {whole milk}	0.005083884	0.1858736	0.027351296	1
## [1015]	tropical fruit}	=> {tropical fruit}	0.005083884			

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##      whole milk}          => {newspapers}          0.005083884  0.1201923 0.042297916 1
## [1016] {newspapers,       => {other vegetables} 0.005998983  0.5221239 0.011489578 2
##      root vegetables}    => {root vegetables} 0.005998983  0.3105263 0.019318760 2
## [1017] {newspapers,       => {newspapers}          0.005998983  0.1266094 0.047381800 1
##      other vegetables}   => {whole milk}          0.005795628  0.5044248 0.011489578 1
## [1018] {other vegetables,=> {root vegetables} 0.005795628  0.2118959 0.027351296 1
##      root vegetables}    => {newspapers}          0.005795628  0.1185031 0.048906965 1
## [1019] {newspapers,       => {root vegetables} 0.005795628  0.3311258 0.015353330 1
##      root vegetables}    => {yogurt}              0.005083884  0.2577320 0.019725470 1
## [1020] {newspapers,       => {newspapers}          0.005083884  0.1479290 0.034367056 1
##      whole milk}          => {rolls/buns}         0.005083884  0.005592272 0.3642384 0.015353330 1
## [1021] {root vegetables,=> {yogurt}              0.005083884  0.2894737 0.019318760 2
##      whole milk}          => {newspapers}          0.005083884  0.005592272 0.1288056 0.043416370 1
## [1022] {newspapers,       => {other vegetables} 0.005083884  0.005592272 0.1179673 0.056024403 1
##      yogurt}              => {yogurt}              0.006609049  0.4304636 0.015353330 1
## [1023] {newspapers,       => {newspapers}          0.006609049  0.2416357 0.027351296 1
##      rolls/buns}           => {whole milk}          0.006609049  0.005490595 0.2783505 0.019725470 1
## [1024] {rolls/buns,       => {yogurt}              0.006609049  0.005490595 0.2842105 0.019318760 1
##      yogurt}              => {newspapers}          0.006609049  0.005490595 0.1288783 0.042602949 1
## [1025] {newspapers,       => {other vegetables} 0.006609049  0.005490595 0.007625826 0.3865979 0.019725470 1
##      yogurt}              => {newspapers}          0.006609049  0.007625826 0.007625826 0.2788104 0.027351296 1
## [1026] {newspapers,       => {rolls/buns}         0.006609049  0.007625826 0.007625826 0.1346499 0.056634469 1
##      other vegetables}    => {whole milk}          0.006609049  0.008337570 0.4315789 0.019318760 1
## [1027] {other vegetables,=> {newspapers}          0.006609049  0.008337570 0.008337570 0.3048327 0.027351296 1
##      yogurt}              => {other vegetables} 0.006609049  0.008337570 0.1114130 0.074834774 1
## [1028] {newspapers,       => {newspapers}          0.006609049  0.008337570 0.005083884 0.5102041 0.009964413 2
##      yogurt}              => {rolls/buns}         0.006609049  0.005083884 0.2283105 0.022267412 3
## [1029] {newspapers,       => {whole milk}          0.006609049  0.005083884 0.005083884 0.2283105 0.022267412 3
##      whole milk}           => {newspapers}          0.006609049  0.005083884 0.005083884 0.1114130 0.074834774 1
## [1030] {whole milk,       => {other vegetables} 0.006609049  0.005083884 0.005083884 0.005490595 0.2783505 0.019725470 1
##      yogurt}              => {yogurt}              0.006609049  0.005083884 0.005083884 0.005490595 0.2842105 0.019318760 1
## [1031] {newspapers,       => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.1288783 0.042602949 1
##      rolls/buns}           => {other vegetables} 0.006609049  0.005083884 0.005083884 0.005490595 0.007625826 0.3865979 0.019725470 1
## [1032] {newspapers,       => {rolls/buns}         0.006609049  0.005083884 0.005083884 0.005490595 0.007625826 0.2788104 0.027351296 1
##      other vegetables}    => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.007625826 0.1346499 0.056634469 1
## [1033] {other vegetables,=> {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.007625826 0.2283105 0.022267412 3
##      rolls/buns}           => {yogurt}              0.006609049  0.005083884 0.005083884 0.005490595 0.008337570 0.4315789 0.019318760 1
## [1034] {newspapers,       => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.1288783 0.042602949 1
##      rolls/buns}           => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.2416357 0.027351296 1
## [1035] {newspapers,       => {rolls/buns}         0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.007625826 0.3865979 0.019725470 1
##      whole milk}           => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.007625826 0.2788104 0.027351296 1
## [1036] {rolls/buns,       => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.007625826 0.1346499 0.056634469 1
##      whole milk}           => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.007625826 0.1114130 0.074834774 1
## [1037] {newspapers,       => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.008337570 0.4315789 0.019318760 1
##      other vegetables}    => {other vegetables} 0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.008337570 0.3048327 0.027351296 1
## [1038] {newspapers,       => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.008337570 0.1114130 0.074834774 1
##      whole milk}           => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.008337570 0.2283105 0.022267412 3
## [1039] {other vegetables,=> {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.5102041 0.009964413 2
##      whole milk}           => {other vegetables} 0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.2283105 0.022267412 3
## [1040] {domestic eggs,    => {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.1114130 0.074834774 1
##      whipped/sour cream}  => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.2283105 0.022267412 3
## [1041] {domestic eggs,    => {other vegetables} 0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.5102041 0.009964413 2
##      other vegetables}    => {whipped/sour cream} 0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.2283105 0.022267412 3
## [1042] {other vegetables,=> {whole milk}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.1114130 0.074834774 1
##      whole milk}           => {newspapers}          0.006609049  0.005083884 0.005083884 0.005490595 0.005490595 0.005083884 0.2283105 0.022267412 3

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##	whipped/sour cream}	=> {domestic eggs}	0.005083884	0.1760563	0.028876462	2	
## [1043]	{domestic eggs,	=> {whole milk}	0.005693950	0.5714286	0.009964413	2	
##	whipped/sour cream}	=> {whipped/sour cream}	0.005693950	0.1898305	0.029994916	2	
## [1044]	{domestic eggs,	=> {domestic eggs}	0.005693950	0.1766562	0.032231825	2	
##	whole milk}	=> {whole milk}	0.005388917	0.6235294	0.008642603	2	
## [1045]	{whipped/sour cream,	=> {pip fruit}	0.005388917	0.1796610	0.029994916	2	
##	whole milk}	=> {whole milk}	0.005388917	0.1790541	0.030096594	2	
## [1046]	{domestic eggs,	=> {domestic eggs}	0.005693950	0.5490196	0.010371124	2	
##	pip fruit}	=> {whole milk}	0.005693950	0.1898305	0.029994916	2	
## [1047]	{domestic eggs,	=> {citrus fruit}	0.005693950	0.1866667	0.030503305	2	
##	whole milk}	=> {domestic eggs}	0.006914082	0.6071429	0.011387900	2	
## [1048]	{pip fruit,	=> {whole milk}	0.006914082	0.2305085	0.029994916	2	
##	whole milk}	=> {tropical fruit}	0.006914082	0.1634615	0.042297916	2	
## [1049]	{citrus fruit,	=> {domestic eggs}	0.007320793	0.5106383	0.014336553	2	
##	domestic eggs}	=> {whole milk}	0.007320793	0.3287671	0.022267412	3	
## [1050]	{domestic eggs,	=> {citrus fruit}	0.007320793	0.1545064	0.047381800	2	
##	whole milk}	=> {domestic eggs}	0.008540925	0.5957447	0.014336553	2	
## [1051]	{citrus fruit,	=> {root vegetables}	0.008540925	0.2847458	0.029994916	2	
##	whole milk}	=> {whole milk}	0.008540925	0.1746362	0.048906965	2	
## [1052]	{domestic eggs,	=> {root vegetables}	0.005083884	0.4098361	0.012404677	2	
##	tropical fruit}	=> {domestic eggs}	0.005083884	0.2283105	0.022267412	1	
## [1053]	{domestic eggs,	=> {other vegetables}	0.005083884	0.1552795	0.032740214	2	
##	whole milk}	=> {root vegetables}	0.005185562	0.4180328	0.012404677	1	
## [1054]	{tropical fruit,	=> {domestic eggs}	0.005185562	0.1728814	0.029994916	0	
##	whole milk}	=> {whole milk}	0.005185562	0.005185562	0.1294416	0.040061007	2
## [1055]	{domestic eggs,	=> {soda}	0.005185562	0.005795628	0.4042553	0.014336553	2
##	root vegetables}	=> {domestic eggs}	0.005185562	0.005795628	0.2602740	0.022267412	1
## [1056]	{domestic eggs,	=> {other vegetables}	0.005185562	0.005795628	0.1796610	0.029994916	2
##	other vegetables}	=> {root vegetables}	0.005185562	0.005795628	0.1746362	0.048906965	2
## [1057]	{other vegetables,	=> {domestic eggs}	0.005185562	0.005795628	0.4098361	0.012404677	2
##	root vegetables}	=> {whole milk}	0.005185562	0.005795628	0.2283105	0.022267412	1
## [1058]	{domestic eggs,	=> {root vegetables}	0.005185562	0.005795628	0.1552795	0.032740214	2
##	root vegetables}	=> {domestic eggs}	0.005185562	0.005795628	0.1728814	0.029994916	0
## [1059]	{domestic eggs,	=> {whole milk}	0.005185562	0.005795628	0.005185562	0.040061007	2
##	whole milk}	=> {root vegetables}	0.005185562	0.005795628	0.4042553	0.014336553	2
## [1060]	{root vegetables,	=> {domestic eggs}	0.005185562	0.005795628	0.2602740	0.022267412	1
##	whole milk}	=> {whole milk}	0.005185562	0.005795628	0.1796610	0.029994916	2
## [1061]	{domestic eggs,	=> {other vegetables}	0.005185562	0.005795628	0.1746362	0.048906965	2
##	soda}	=> {domestic eggs}	0.005185562	0.005795628	0.4098361	0.012404677	2
## [1062]	{domestic eggs,	=> {other vegetables}	0.005185562	0.005795628	0.2283105	0.022267412	1
##	other vegetables}	=> {soda}	0.005185562	0.005795628	0.1552795	0.032740214	2
## [1063]	{other vegetables,	=> {domestic eggs}	0.005185562	0.005795628	0.1728814	0.029994916	0
##	soda}	=> {whole milk}	0.005185562	0.005795628	0.005185562	0.040061007	2
## [1064]	{domestic eggs,	=> {soda}	0.005185562	0.005795628	0.4042553	0.014336553	2
##	soda}	=> {domestic eggs}	0.005185562	0.005795628	0.2602740	0.022267412	1
## [1065]	{domestic eggs,	=> {whole milk}	0.005185562	0.005795628	0.1796610	0.029994916	0
##	whole milk}	=> {soda}	0.005185562	0.005795628	0.1746362	0.048906965	2
## [1066]	{soda,	=> {domestic eggs}	0.005185562	0.005795628	0.4098361	0.012404677	2
##	whole milk}	=> {whole milk}	0.005185562	0.005795628	0.2283105	0.022267412	1
## [1067]	{domestic eggs,	=> {other vegetables}	0.005185562	0.005795628	0.1552795	0.032740214	2
##	yogurt}	=> {domestic eggs}	0.005185562	0.005795628	0.1728814	0.029994916	0
## [1068]	{domestic eggs,	=> {yogurt}	0.005185562	0.005795628	0.005185562	0.040061007	2
##	other vegetables}	=> {other vegetables}	0.005185562	0.005795628	0.4042553	0.014336553	2
## [1069]	{other vegetables,	=> {soda}	0.005185562	0.005795628	0.2602740	0.022267412	1

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##      yogurt}          => {domestic eggs}          0.005795628  0.1334895  0.043416370  2
## [1070] {domestic eggs,      => {whole milk}           0.007727504  0.5390071  0.014336553  2
##      yogurt}          => {yogurt}                0.007727504  0.2576271  0.029994916  1
## [1071] {domestic eggs,      => {domestic eggs}          0.007727504  0.1379310  0.056024403  2
##      whole milk}         => {other vegetables}    0.005897306  0.3766234  0.015658363  1
## [1072] {whole milk,        => {rolls/buns}            0.005897306  0.2648402  0.022267412  1
##      yogurt}          => {domestic eggs}          0.005897306  0.1384248  0.042602949  2
## [1073] {domestic eggs,      => {other vegetables}    0.006609049  0.4220779  0.015658363  1
##      rolls/buns}         => {rolls/buns}            0.006609049  0.2203390  0.029994916  1
## [1074] {domestic eggs,      => {domestic eggs}          0.006609049  0.1166966  0.056634469  1
##      other vegetables}   => {whole milk}           0.012302999  0.5525114  0.022267412  2
## [1075] {other vegetables,  => {rolls/buns}            0.012302999  0.4101695  0.029994916  2
##      rolls/buns}         => {domestic eggs}          0.012302999  0.1644022  0.074834774  2
## [1076] {domestic eggs,      => {whole milk}           0.005185562  0.3642857  0.014234875  2
##      rolls/buns}         => {other vegetables}    0.005185562  0.2817680  0.018403660  2
## [1077] {domestic eggs,      => {soda}                 0.005185562  0.1789474  0.028978139  2
##      whole milk}         => {bottled water}          0.005185562  0.005795628  0.4071429  0.014234875  1
## [1078] {rolls/buns,        => {fruit/vegetable juice} 0.005185562  0.2175573  0.026639553  1
##      whole milk}         => {whole milk}           0.005185562  0.005795628  0.1686391  0.034367056  2
## [1079] {domestic eggs,      => {bottled water}          0.005185562  0.006609049  0.4814815  0.013726487  2
##      other vegetables}   => {fruit/vegetable juice} 0.005185562  0.006609049  0.3140097  0.021047280  2
## [1080] {domestic eggs,      => {tropical fruit}        0.005185562  0.006609049  0.1841360  0.035892222  2
##      whole milk}         => {other vegetables}    0.005185562  0.005998983  0.4370370  0.013726487  1
## [1081] {other vegetables,  => {fruit/vegetable juice} 0.005185562  0.005998983  0.005795628  0.2251908  0.026639553  2
##      whole milk}         => {whole milk}           0.005185562  0.006609049  0.1418269  0.042297916  1
## [1082] {bottled water,      => {root vegetables}       0.005185562  0.006609049  0.5508475  0.011997966  2
##      fruit/vegetable juice}=> {tropical fruit}        0.005185562  0.006609049  0.3140097  0.021047280  2
## [1083] {fruit/vegetable juice,  => {fruit/vegetable juice} 0.005185562  0.006609049  0.005795628  0.1841360  0.035892222  2
##      soda}               => {whole milk}           0.005185562  0.006609049  0.005998983  0.4370370  0.013726487  1
## [1084] {bottled water,      => {bottled water}          0.005185562  0.006609049  0.005998983  0.005795628  0.2251908  0.026639553  2
##      soda}               => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.1686391  0.034367056  2
## [1085] {bottled water,      => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.1418269  0.042297916  1
##      fruit/vegetable juice}=> {whole milk}           0.005185562  0.006609049  0.005998983  0.005795628  0.005795628  0.4071429  0.014234875  1
## [1086] {fruit/vegetable juice,  => {bottled water}          0.005185562  0.006609049  0.005998983  0.005795628  0.005795628  0.2175573  0.026639553  1
##      whole milk}         => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.1686391  0.034367056  2
## [1087] {bottled water,      => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.1418269  0.042297916  1
##      whole milk}         => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.4071429  0.014234875  1
## [1088] {fruit/vegetable juice,  => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.2175573  0.026639553  1
##      tropical fruit}     => {other vegetables}    0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.1686391  0.034367056  2
## [1089] {fruit/vegetable juice,  => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.1418269  0.042297916  1
##      other vegetables}   => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005795628  0.4071429  0.014234875  1
## [1090] {other vegetables,  => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.2175573  0.026639553  1
##      tropical fruit}     => {whole milk}           0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.1686391  0.034367056  2
## [1091] {fruit/vegetable juice,  => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.1418269  0.042297916  1
##      tropical fruit}     => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005795628  0.4071429  0.014234875  1
## [1092] {fruit/vegetable juice,  => {whole milk}           0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.2175573  0.026639553  1
##      whole milk}         => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.1686391  0.034367056  2
## [1093] {tropical fruit,      => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.1418269  0.042297916  1
##      whole milk}         => {tropical fruit}        0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.4071429  0.014234875  1
## [1094] {fruit/vegetable juice,  => {other vegetables}    0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005795628  0.2175573  0.026639553  1
##      root vegetables}    => {fruit/vegetable juice} 0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.1686391  0.034367056  2
## [1095] {fruit/vegetable juice,  => {other vegetables}    0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.1418269  0.042297916  1
##      other vegetables}   => {root vegetables}       0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005795628  0.4071429  0.014234875  1
## [1096] {other vegetables,      => {root vegetables}       0.005185562  0.006609049  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005998983  0.005795628  0.005795628  0.005795628  0.2175573  0.026639553  1

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##      root vegetables}          => {fruit/vegetable juice} 0.006609049 0.1394850 0.047381800 1
## [1097] {fruit/vegetable juice, => {whole milk}           0.006507372 0.5423729 0.011997966 2
##      root vegetables}          => {root vegetables}   0.006507372 0.2442748 0.026639553 2
## [1098] {fruit/vegetable juice, => {fruit/vegetable juice} 0.006507372 0.1330561 0.048906965 1
##      whole milk}              => {yogurt}             0.005083884 0.2762431 0.018403660 1
## [1099] {root vegetables,      => {soda}               0.005083884 0.2717391 0.018708693 1
##      whole milk}              => {fruit/vegetable juice} 0.005083884 0.1858736 0.027351296 2
## [1100] {fruit/vegetable juice, => {whole milk}           0.006100661 0.3314917 0.018403660 1
##      soda}                   => {soda}               0.006100661 0.2290076 0.026639553 1
## [1101] {fruit/vegetable juice, => {fruit/vegetable juice} 0.006100661 0.1522843 0.040061007 2
##      yogurt}                 => {other vegetables} 0.008235892 0.4402174 0.018708693 2
## [1102] {soda,                  => {yogurt}             0.008235892 0.3913043 0.021047280 2
##      whole milk}              => {fruit/vegetable juice} 0.008235892 0.1896956 0.043416370 2
## [1103] {fruit/vegetable juice, => {whole milk}           0.009456024 0.5054348 0.018708693 1
##      soda}                   => {yogurt}             0.009456024 0.3549618 0.026639553 2
## [1104] {fruit/vegetable juice, => {fruit/vegetable juice} 0.009456024 0.1687840 0.056024403 2
##      whole milk}              => {whole milk}          0.005592272 0.3846154 0.014539908 1
## [1105] {soda,                  => {rolls/buns}         0.005592272 0.2099237 0.026639553 1
##      whole milk}              => {whole milk}          0.010472801 0.4975845 0.021047280 1
## [1106] {fruit/vegetable juice, => {other vegetables} 0.010472801 0.3931298 0.026639553 2
##      yogurt}                 => {fruit/vegetable juice} 0.010472801 0.1399457 0.074834774 1
## [1107] {fruit/vegetable juice, => {other vegetables} 0.005592272 0.6043956 0.009252669 3
##      other vegetables}        => {pip fruit}          0.005592272 0.1936620 0.028876462 2
## [1108] {other vegetables,     => {whipped/sour cream} 0.005592272 0.2140078 0.026131164 2
##      yogurt}                 => {whole milk}          0.005998983 0.6483516 0.009252669 2
## [1109] {fruit/vegetable juice, => {pip fruit}           0.005998983 0.1861199 0.032231825 2
##      yogurt}                 => {whipped/sour cream} 0.005998983 0.1993243 0.030096594 2
## [1110] {fruit/vegetable juice, => {whole milk}           0.005998983 0.6483516 0.009252669 2
##      whole milk}              => {other vegetables} 0.005998983 0.1993243 0.030096594 2
## [1111] {whole milk,            => {fruit/vegetable juice} 0.009456024 0.1687840 0.056024403 2
##      yogurt}                 => {whole milk}          0.005592272 0.3846154 0.014539908 1
## [1112] {fruit/vegetable juice, => {rolls/buns}         0.005592272 0.2099237 0.026639553 1
##      rolls/buns}              => {whole milk}          0.010472801 0.4975845 0.021047280 1
## [1113] {fruit/vegetable juice, => {whole milk}           0.010472801 0.3931298 0.026639553 2
##      whole milk}              => {other vegetables} 0.005592272 0.6043956 0.009252669 3
## [1114] {fruit/vegetable juice, => {pip fruit}           0.005592272 0.1936620 0.028876462 2
##      other vegetables}        => {whipped/sour cream} 0.005592272 0.2140078 0.026131164 2
## [1115] {fruit/vegetable juice, => {whole milk}           0.005592272 0.6483516 0.009252669 2
##      whole milk}              => {other vegetables} 0.005592272 0.1993243 0.030096594 2
## [1116] {other vegetables,     => {fruit/vegetable juice} 0.009456024 0.1687840 0.056024403 2
##      whole milk}              => {whole milk}          0.005592272 0.3846154 0.014539908 1
## [1117] {pip fruit,             => {other vegetables} 0.005592272 0.2099237 0.026639553 1
##      whipped/sour cream}      => {pip fruit}          0.005592272 0.1936620 0.028876462 2
## [1118] {other vegetables,     => {whipped/sour cream} 0.005592272 0.2140078 0.026131164 2
##      whipped/sour cream}      => {whole milk}          0.005998983 0.6483516 0.009252669 2
## [1119] {other vegetables,     => {pip fruit}           0.005998983 0.1861199 0.032231825 2
##      pip fruit}               => {whipped/sour cream} 0.005998983 0.1993243 0.030096594 2
## [1120] {pip fruit,             => {whole milk}           0.005998983 0.6483516 0.009252669 2
##      whipped/sour cream}      => {pip fruit}          0.005998983 0.1861199 0.032231825 2
## [1121] {whipped/sour cream,    => {whole milk}           0.005998983 0.6483516 0.009252669 2
##      whole milk}              => {whole milk}          0.005998983 0.6483516 0.009252669 2
## [1122] {pip fruit,             => {whipped/sour cream} 0.005998983 0.1993243 0.030096594 2
##      whole milk}              => {whole milk}          0.005998983 0.6483516 0.009252669 2
## [1123] {citrus fruit,

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##	whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
## [1124]	{other vegetables,	=> {citrus fruit}	0.005693950	0.1971831	0.028876462	2
##	whipped/sour cream}	=> {whipped/sour cream}	0.005693950	0.1971831	0.028876462	2
## [1125]	{citrus fruit,	=> {whole milk}	0.006304016	0.5794393	0.010879512	2
##	other vegetables}	=> {citrus fruit}	0.006304016	0.1955836	0.032231825	2
## [1126]	{citrus fruit,	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305	2
##	whipped/sour cream}	=> {whole milk}	0.005083884	0.5617978	0.009049314	2
## [1127]	{whipped/sour cream,	=> {sausage}	0.005083884	0.1577287	0.032231825	1
##	whole milk}	=> {whipped/sour cream}	0.005083884	0.1700680	0.029893238	2
## [1128]	{citrus fruit,	=> {yogurt}	0.006202339	0.4485294	0.013828165	3
##	whole milk}	=> {tropical fruit}	0.006202339	0.2990196	0.020742247	2
## [1129]	{sausage,	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172	2
##	whipped/sour cream}	=> {other vegetables}	0.007829181	0.5661765	0.013828165	2
## [1130]	{whipped/sour cream,	=> {tropical fruit}	0.007829181	0.2711268	0.028876462	2
##	whole milk}	=> {whipped/sour cream}	0.007829181	0.2181303	0.035892222	3
## [1131]	{sausage,	=> {whole milk}	0.007930859	0.5735294	0.013828165	2
##	whole milk}	=> {tropical fruit}	0.007930859	0.2460568	0.032231825	2
## [1132]	{tropical fruit,	=> {whipped/sour cream}	0.007930859	0.1875000	0.042297916	2
##	whipped/sour cream}	=> {yogurt}	0.006405694	0.3750000	0.017081851	2
## [1133]	{whipped/sour cream,	=> {root vegetables}	0.006405694	0.3088235	0.020742247	2
##	yogurt}	=> {whipped/sour cream}	0.006405694	0.2480315	0.025826131	3
## [1134]	{tropical fruit,	=> {other vegetables}	0.008540925	0.5000000	0.017081851	2
##	yogurt}	=> {root vegetables}	0.008540925	0.2957746	0.028876462	2
## [1135]	{tropical fruit,	=> {whipped/sour cream}	0.008540925	0.1802575	0.047381800	2
##	whipped/sour cream}	=> {whole milk}	0.009456024	0.5535714	0.017081851	2
## [1136]	{other vegetables,	=> {root vegetables}	0.009456024	0.2933754	0.032231825	2
##	whipped/sour cream}	=> {whipped/sour cream}	0.009456024	0.1933472	0.048906965	2
## [1137]	{other vegetables,	=> {whole milk}				
##	tropical fruit}	=> {tropical fruit}				
## [1138]	{tropical fruit,	=> {whipped/sour cream}				
##	whipped/sour cream}	=> {yogurt}				
## [1139]	{whipped/sour cream,	=> {root vegetables}				
##	whole milk}	=> {whipped/sour cream}				
## [1140]	{tropical fruit,	=> {other vegetables}				
##	whole milk}	=> {tropical fruit}				
## [1141]	{root vegetables,	=> {whipped/sour cream}				
##	whipped/sour cream}	=> {yogurt}				
## [1142]	{whipped/sour cream,	=> {root vegetables}				
##	yogurt}	=> {whipped/sour cream}				
## [1143]	{root vegetables,	=> {other vegetables}				
##	yogurt}	=> {tropical fruit}				
## [1144]	{root vegetables,	=> {whipped/sour cream}				
##	whipped/sour cream}	=> {yogurt}				
## [1145]	{other vegetables,	=> {root vegetables}				
##	whipped/sour cream}	=> {whipped/sour cream}				
## [1146]	{other vegetables,	=> {whole milk}				
##	root vegetables}	=> {root vegetables}				
## [1147]	{root vegetables,	=> {whipped/sour cream}				
##	whipped/sour cream}	=> {whole milk}				
## [1148]	{whipped/sour cream,	=> {root vegetables}				
##	whole milk}	=> {whipped/sour cream}				
## [1149]	{root vegetables,	=> {whole milk}				
##	whole milk}	=> {root vegetables}				
## [1150]	{soda,	=> {whipped/sour cream}				

##	whipped/sour cream}	=> {whole milk}	0.005490595	0.4736842	0.011591256	1
## [1151]	{whipped/sour cream,	=> {soda}	0.005490595	0.1703470	0.032231825	0
##	whole milk}	=> {whipped/sour cream}	0.005490595	0.1370558	0.040061007	1
## [1152]	{soda,	=> {other vegetables}	0.010167768	0.4901961	0.020742247	2
##	whole milk}	=> {yogurt}	0.010167768	0.3521127	0.028876462	2
## [1153]	{whipped/sour cream,	=> {whipped/sour cream}	0.010167768	0.2341920	0.043416370	3
##	yogurt}	=> {whole milk}	0.010879512	0.5245098	0.020742247	2
## [1154]	{other vegetables,	=> {yogurt}	0.010879512	0.3375394	0.032231825	2
##	whipped/sour cream}	=> {whipped/sour cream}	0.010879512	0.1941924	0.056024403	2
## [1155]	{other vegetables,	=> {whole milk}	0.006710727	0.4583333	0.014641586	2
##	yogurt}	=> {rolls/buns}	0.006710727	0.2323944	0.028876462	1
## [1156]	{whipped/sour cream,	=> {whipped/sour cream}	0.006710727	0.1575179	0.042602949	2
##	yogurt}	=> {whole milk}	0.007829181	0.5347222	0.014641586	2
## [1157]	{whipped/sour cream,	=> {rolls/buns}	0.007829181	0.2429022	0.032231825	1
##	whole milk}	=> {whipped/sour cream}	0.007829181	0.1382406	0.056634469	1
## [1158]	{whole milk,	=> {whole milk}	0.014641586	0.5070423	0.028876462	1
##	yogurt}	=> {other vegetables}	0.014641586	0.4542587	0.032231825	2
## [1159]	{rolls/buns,	=> {rolls/buns}	0.014641586	0.1956522	0.074834774	2
##	whipped/sour cream}	=> {whipped/sour cream}	0.005083884	0.4761905	0.010676157	1
## [1160]	{other vegetables,	=> {whole milk}	0.005083884	0.1689189	0.030096594	1
##	whipped/sour cream}	=> {pastry}	0.005083884	0.1529052	0.033248602	2
## [1161]	{other vegetables,	=> {pip fruit}	0.005592272	0.4044118	0.013828165	3
##	rolls/buns}	=> {tropical fruit}	0.005592272	0.2736318	0.020437214	3
## [1162]	{rolls/buns,	=> {citrus fruit}	0.005592272	0.2806122	0.019928826	3
##	whipped/sour cream}	=> {whole milk}	0.005897306	0.4264706	0.013828165	2
## [1163]	{whipped/sour cream,	=> {other vegetables}	0.005897306	0.2256809	0.026131164	2
##	whole milk}	=> {citrus fruit}	0.005897306	0.2042254	0.028876462	2
## [1164]	{rolls/buns,	=> {whole milk}	0.005897306	0.1956522	0.074834774	2
##	whole milk}	=> {other vegetables}	0.005897306	0.1689189	0.030096594	1
## [1165]	{other vegetables,	=> {whole milk}	0.005897306	0.1529052	0.033248602	2
##	whipped/sour cream}	=> {rolls/buns}	0.005897306	0.1382406	0.056634469	1
## [1166]	{whipped/sour cream,	=> {whipped/sour cream}	0.005897306	0.1956522	0.074834774	2
##	whole milk}	=> {whole milk}	0.005897306	0.1689189	0.030096594	1
## [1167]	{other vegetables,	=> {other vegetables}	0.005897306	0.1529052	0.033248602	2
##	whole milk}	=> {whipped/sour cream}	0.005897306	0.1382406	0.056634469	1
## [1168]	{pastry,	=> {whole milk}	0.005897306	0.1956522	0.074834774	2
##	pip fruit}	=> {pastry}	0.005897306	0.1689189	0.030096594	1
## [1169]	{pip fruit,	=> {whole milk}	0.005897306	0.1529052	0.033248602	2
##	whole milk}	=> {whole milk}	0.005897306	0.1382406	0.056634469	1
## [1170]	{pastry,	=> {pastry}	0.005897306	0.1956522	0.074834774	2
##	whole milk}	=> {pip fruit}	0.005897306	0.1689189	0.030096594	1
## [1171]	{citrus fruit,	=> {tropical fruit}	0.005897306	0.1529052	0.033248602	2
##	pip fruit}	=> {citrus fruit}	0.005897306	0.1382406	0.056634469	1
## [1172]	{pip fruit,	=> {whole milk}	0.005897306	0.1956522	0.074834774	2
##	tropical fruit}	=> {whole milk}	0.005897306	0.1689189	0.030096594	1
## [1173]	{citrus fruit,	=> {whole milk}	0.005897306	0.1529052	0.033248602	2
##	tropical fruit}	=> {whole milk}	0.005897306	0.1382406	0.056634469	1
## [1174]	{citrus fruit,	=> {whole milk}	0.005897306	0.1956522	0.074834774	2
##	pip fruit}	=> {pastry}	0.005897306	0.1689189	0.030096594	1
## [1175]	{other vegetables,	=> {whole milk}	0.005897306	0.1529052	0.033248602	2
##	pip fruit}	=> {whole milk}	0.005897306	0.1382406	0.056634469	1
## [1176]	{citrus fruit,	=> {whole milk}	0.005897306	0.1956522	0.074834774	2
##	other vegetables}	=> {whole milk}	0.005897306	0.1689189	0.030096594	1
## [1177]	{citrus fruit,	=> {whole milk}	0.005897306	0.1529052	0.033248602	2

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##      pip fruit}          => {whole milk}          0.005185562  0.3750000  0.013828165 1
## [1178] {pip fruit,       => {citrus fruit}        0.005185562  0.1722973  0.030096594 2
##      whole milk}         => {pip fruit}          0.005185562  0.1700000  0.030503305 2
## [1179] {citrus fruit,   => {whole milk}          0.005592272  0.5188679  0.010777834 2
##      whole milk}         => {sausage}           0.005592272  0.1858108  0.030096594 1
## [1180] {pip fruit,       => {whole milk}          0.005592272  0.1870748  0.029893238 2
##      sausage}            => {pip fruit}           0.005592272  0.2587065  0.020437214 2
## [1181] {pip fruit,       => {sausage}            0.005592272  0.3398693  0.015556685 3
##      whole milk}          => {pip fruit}           0.005592272  0.2512077  0.021047280 3
## [1182] {sausage,         => {root vegetables}    0.005287239  0.3134328  0.020437214 2
##      whole milk}          => {tropical fruit}     0.005287239  0.2187500  0.029283172 2
## [1183] {pip fruit,       => {tropical fruit}     0.005287239  0.2634561  0.035892222 3
##      tropical fruit}      => {pip fruit}           0.005287239  0.4626866  0.020437214 2
## [1184] {pip fruit,       => {pip fruit}            0.005287239  0.4129353  0.020437214 1
##      root vegetables}     => {tropical fruit}     0.005287239  0.2804054  0.030096594 2
## [1185] {root vegetables, => {pip fruit}            0.005287239  0.2937853  0.017996950 2
##      tropical fruit}      => {other vegetables}   0.009456024  0.5751634  0.015556685 2
## [1186] {pip fruit,       => {tropical fruit}     0.009456024  0.1995192  0.042297916 2
##      tropical fruit}      => {pip fruit}           0.009456024  0.3398693  0.015556685 2
## [1187] {pip fruit,       => {yogurt}              0.009456024  0.1716738  0.047381800 2
##      yogurt}              => {tropical fruit}     0.009456024  0.2047244  0.025826131 2
## [1188] {tropical fruit, => {pip fruit}            0.009456024  0.208439248 0.020437214 1
##      yogurt}              => {other vegetables}   0.008134215  0.3112840  0.026131164 2
## [1189] {pip fruit,       => {tropical fruit}     0.008134215  0.208439248 0.020437214 1
##      tropical fruit}      => {pip fruit}           0.008134215  0.5228758  0.015556685 2
## [1190] {other vegetables,=> {pip fruit}            0.008134215  0.2972973  0.030096594 2
##      pip fruit}             => {tropical fruit}     0.008134215  0.1751856  0.015556685 2
## [1191] {other vegetables,=> {pip fruit}            0.008134215  0.1751856  0.015556685 2
##      tropical fruit}      => {pip fruit}           0.008134215  0.2804054  0.030096594 2
## [1192] {pip fruit,       => {whole milk}          0.008134215  0.2804054  0.030096594 2
##      tropical fruit}      => {tropical fruit}     0.008134215  0.2972973  0.030096594 2
## [1193] {pip fruit,       => {whole milk}          0.008134215  0.2972973  0.030096594 2
##      whole milk}            => {tropical fruit}     0.008134215  0.1751856  0.015556685 2
## [1194] {tropical fruit,=> {pip fruit}            0.008134215  0.1751856  0.015556685 2
##      whole milk}             => {yogurt}             0.008134215  0.2804054  0.030096594 2
## [1195] {pip fruit,       => {root vegetables}    0.008134215  0.2804054  0.030096594 2
##      root vegetables}      => {pip fruit}           0.008134215  0.2972973  0.030096594 2
## [1196] {pip fruit,       => {yogurt}              0.008134215  0.2972973  0.030096594 2
##      yogurt}                => {root vegetables}    0.008134215  0.1751856  0.015556685 2
## [1197] {root vegetables,=> {pip fruit}            0.008134215  0.1751856  0.015556685 2
##      yogurt}                => {yogurt}             0.008134215  0.2804054  0.030096594 2
## [1198] {pip fruit,       => {root vegetables}    0.008134215  0.2804054  0.030096594 2
##      root vegetables}      => {other vegetables}   0.008134215  0.2972973  0.030096594 2
## [1199] {other vegetables,=> {pip fruit}            0.008134215  0.2972973  0.030096594 2
##      pip fruit}               => {root vegetables}    0.008134215  0.1751856  0.015556685 2
## [1200] {other vegetables,=> {root vegetables}    0.008134215  0.1751856  0.015556685 2
##      root vegetables}      => {pip fruit}           0.008134215  0.2804054  0.030096594 2
## [1201] {pip fruit,       => {whole milk}          0.008134215  0.2804054  0.030096594 2
##      root vegetables}      => {whole milk}          0.008947636  0.5751634  0.015556685 2
## [1202] {pip fruit,       => {root vegetables}    0.008947636  0.2804054  0.030096594 2
##      whole milk}              => {root vegetables}    0.008947636  0.2972973  0.030096594 2
## [1203] {root vegetables,=> {pip fruit}            0.008947636  0.2972973  0.030096594 2
##      whole milk}             => {pip fruit}           0.008947636  0.1829522  0.048906965 2
## [1204] {pip fruit,

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##      yogurt} => {other vegetables} 0.008134215 0.4519774 0.017996950 2
## [1205] {other vegetables, => {yogurt} 0.008134215 0.3112840 0.026131164 2
##          pip fruit} => {pip fruit} 0.008134215 0.1873536 0.043416370 2
## [1206] {other vegetables, => {whole milk} 0.009557702 0.5310734 0.017996950 2
##          yogurt} => {yogurt} 0.009557702 0.3175676 0.030096594 2
## [1207] {pip fruit, => {pip fruit} 0.009557702 0.1705989 0.056024403 2
##          yogurt} => {whole milk} 0.009557702 0.3649635 0.013929842 1
## [1208] {pip fruit, => {other vegetables} 0.005083884 0.1945525 0.026131164 1
##          whole milk} => {rolls/buns} 0.005083884 0.1193317 0.042602949 1
## [1209] {whole milk, => {other vegetables} 0.006202339 0.4452555 0.013929842 1
##          yogurt} => {rolls/buns} 0.006202339 0.2060811 0.030096594 1
## [1210] {pip fruit, => {pip fruit} 0.006202339 0.1095153 0.056634469 1
##          rolls/buns} => {whole milk} 0.013523132 0.5175097 0.026131164 2
## [1211] {other vegetables, => {other vegetables} 0.013523132 0.4493243 0.030096594 2
##          pip fruit} => {rolls/buns} 0.013523132 0.1807065 0.074834774 2
## [1212] {other vegetables, => {pip fruit} 0.005693950 0.4552846 0.012506355 1
##          rolls/buns} => {whole milk} 0.005693950 0.1712538 0.033248602 1
## [1213] {pip fruit, => {sausage} 0.005693950 0.1904762 0.029893238 2
##          rolls/buns} => {pastry} 0.005083884 0.3846154 0.013218099 1
## [1214] {pip fruit, => {tropical fruit} 0.005083884 0.2252252 0.022572445 2
##          whole milk} => {other vegetables} 0.005083884 0.1416431 0.035892222 1
## [1215] {rolls/buns, => {pastry} 0.006710727 0.5076923 0.013218099 1
##          whole milk} => {whole milk} 0.006710727 0.2018349 0.033248602 1
## [1216] {other vegetables, => {tropical fruit} 0.006710727 0.1586538 0.042297916 1
##          pip fruit} => {pastry} 0.005897306 0.5370370 0.010981190 2
## [1217] {pip fruit, => {root vegetables} 0.005897306 0.2612613 0.022572445 2
##          whole milk} => {other vegetables} 0.005897306 0.1244635 0.047381800 1
## [1218] {other vegetables, => {root vegetables} 0.005897306 0.1244635 0.047381800 1
##          whole milk} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1219] {pastry, => {whole milk} 0.005897306 0.1244635 0.047381800 1
##          sausage} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1220] {pastry, => {sausage} 0.005897306 0.1244635 0.047381800 1
##          whole milk} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1221] {sausage, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          whole milk} => {tropical fruit} 0.005897306 0.1244635 0.047381800 1
## [1222] {pastry, => {other vegetables} 0.005897306 0.1244635 0.047381800 1
##          tropical fruit} => {tropical fruit} 0.005897306 0.1244635 0.047381800 1
## [1223] {other vegetables, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          pastry} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1224] {other vegetables, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          tropical fruit} => {whole milk} 0.005897306 0.1244635 0.047381800 1
## [1225] {pastry, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          tropical fruit} => {whole milk} 0.005897306 0.1244635 0.047381800 1
## [1226] {pastry, => {tropical fruit} 0.005897306 0.1244635 0.047381800 1
##          whole milk} => {tropical fruit} 0.005897306 0.1244635 0.047381800 1
## [1227] {tropical fruit, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          whole milk} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1228] {pastry, => {other vegetables} 0.005897306 0.1244635 0.047381800 1
##          root vegetables} => {root vegetables} 0.005897306 0.1244635 0.047381800 1
## [1229] {other vegetables, => {root vegetables} 0.005897306 0.1244635 0.047381800 1
##          pastry} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1230] {other vegetables, => {pastry} 0.005897306 0.1244635 0.047381800 1
##          root vegetables} => {pastry} 0.005897306 0.1244635 0.047381800 1
## [1231] {pastry,

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## [1232] {pastry,	=> {whole milk}	0.005693950	0.5185185	0.010981190	2
## [1233] {root vegetables,	=> {root vegetables}	0.005693950	0.1712538	0.033248602	1
## [1234] {pastry,	=> {pastry}	0.005693950	0.1164241	0.048906965	1
## [1235] {pastry,	=> {rolls/buns}	0.005388917	0.2560386	0.021047280	1
## [1236] {rolls/buns,	=> {soda}	0.005388917	0.2572816	0.020945602	1
## [1237] {pastry,	=> {pastry}	0.005388917	0.1405836	0.038332486	1
## [1238] {other vegetables,	=> {other vegetables}	0.005490595	0.2608696	0.021047280	1
## [1239] {other vegetables,	=> {soda}	0.005490595	0.2432432	0.022572445	1
## [1240] {pastry,	=> {pastry}	0.005490595	0.1677019	0.032740214	1
## [1241] {pastry,	=> {whole milk}	0.008235892	0.3913043	0.021047280	1
## [1242] {soda,	=> {soda}	0.008235892	0.2477064	0.033248602	1
## [1243] {pastry,	=> {pastry}	0.008235892	0.2055838	0.040061007	2
## [1244] {yogurt}	=> {rolls/buns}	0.005795628	0.3275862	0.017691917	1
## [1245] {rolls/buns,	=> {yogurt}	0.005795628	0.2766990	0.020945602	1
## [1246] {yogurt}	=> {pastry}	0.005795628	0.1686391	0.034367056	1
## [1247] {other vegetables,	=> {other vegetables}	0.006609049	0.3735632	0.017691917	1
## [1248] {pastry}	=> {yogurt}	0.006609049	0.2927928	0.022572445	2
## [1249] {yogurt}	=> {pastry}	0.006609049	0.1522248	0.043416370	1
## [1250] {pastry,	=> {whole milk}	0.009150991	0.5172414	0.017691917	2
## [1251] {whole milk,	=> {yogurt}	0.009150991	0.2752294	0.033248602	1
## [1252] {yogurt}	=> {pastry}	0.009150991	0.1633394	0.056024403	1
## [1253] {rolls/buns}	=> {other vegetables}	0.006100661	0.2912621	0.020945602	1
## [1254] {other vegetables,	=> {rolls/buns}	0.006100661	0.2702703	0.022572445	1
## [1255] {rolls/buns}	=> {pastry}	0.006100661	0.1431981	0.042602949	1
## [1256] {pastry,	=> {whole milk}	0.008540925	0.4077670	0.020945602	1
## [1257] {whole milk}	=> {rolls/buns}	0.008540925	0.2568807	0.033248602	1
## [1258] {rolls/buns,	=> {pastry}	0.008540925	0.1508079	0.056634469	1
## [1259] {other vegetables,					

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##      pastry} => {whole milk} 0.010574479 0.4684685 0.022572445 1
## [1259] {pastry, whole milk} => {other vegetables} 0.010574479 0.3180428 0.033248602 1
## [1260] {other vegetables, whole milk} => {pastry} 0.010574479 0.1413043 0.074834774 1
## [1261] {bottled water, citrus fruit} => {other vegetables} 0.005083884 0.3759398 0.013523132 1
## [1262] {citrus fruit, other vegetables} => {bottled water} 0.005083884 0.1760563 0.028876462 1
## [1263] {bottled water, other vegetables} => {citrus fruit} 0.005083884 0.2049180 0.024809354 2
## [1264] {bottled water, citrus fruit} => {whole milk} 0.005897306 0.4360902 0.013523132 1
## [1265] {citrus fruit, whole milk} => {bottled water} 0.005897306 0.1933333 0.030503305 1
## [1266] {bottled water, whole milk} => {citrus fruit} 0.005897306 0.1715976 0.034367056 2
## [1267] {citrus fruit, tropical fruit} => {root vegetables} 0.005693950 0.2857143 0.019928826 2
## [1268] {citrus fruit, root vegetables} => {tropical fruit} 0.005693950 0.3218391 0.017691917 3
## [1269] {root vegetables, tropical fruit} => {citrus fruit} 0.005693950 0.2705314 0.021047280 3
## [1270] {citrus fruit, tropical fruit} => {yogurt} 0.006304016 0.3163265 0.019928826 2
## [1271] {citrus fruit, yogurt} => {tropical fruit} 0.006304016 0.2910798 0.021657346 2
## [1272] {tropical fruit, yogurt} => {citrus fruit} 0.006304016 0.2152778 0.029283172 2
## [1273] {citrus fruit, tropical fruit} => {other vegetables} 0.009049314 0.4540816 0.019928826 2
## [1274] {citrus fruit, other vegetables} => {tropical fruit} 0.009049314 0.3133803 0.028876462 2
## [1275] {other vegetables, tropical fruit} => {citrus fruit} 0.009049314 0.2521246 0.035892222 3
## [1276] {citrus fruit, tropical fruit} => {whole milk} 0.009049314 0.4540816 0.019928826 1
## [1277] {citrus fruit, whole milk} => {tropical fruit} 0.009049314 0.2966667 0.030503305 2
## [1278] {tropical fruit, whole milk} => {citrus fruit} 0.009049314 0.2139423 0.042297916 2
## [1279] {citrus fruit, root vegetables} => {other vegetables} 0.010371124 0.5862069 0.017691917 3
## [1280] {citrus fruit, other vegetables} => {root vegetables} 0.010371124 0.3591549 0.028876462 3
## [1281] {other vegetables, root vegetables} => {citrus fruit} 0.010371124 0.2188841 0.047381800 2
## [1282] {citrus fruit, root vegetables} => {whole milk} 0.009150991 0.5172414 0.017691917 2
## [1283] {citrus fruit, whole milk} => {root vegetables} 0.009150991 0.3000000 0.030503305 2
## [1284] {root vegetables, whole milk} => {citrus fruit} 0.009150991 0.1871102 0.048906965 2
## [1285] {citrus fruit,

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##      yogurt} => {rolls/buns} 0.005795628 0.2676056 0.021657346 1
## [1286] {citrus fruit, => {yogurt} 0.005795628 0.3454545 0.016776817 2
##          rolls/buns} => {citrus fruit} 0.005795628 0.1686391 0.034367056 2
## [1287] {rolls/buns, => {other vegetables} 0.007625826 0.3521127 0.021657346 1
##      yogurt} => {yogurt} 0.007625826 0.2640845 0.028876462 1
## [1288] {citrus fruit, => {citrus fruit} 0.007625826 0.1756440 0.043416370 2
##          yogurt} => {other vegetables} 0.007625826 0.4741784 0.021657346 1
## [1289] {citrus fruit, => {whole milk} 0.010269446 0.3366667 0.030503305 2
##          other vegetables} => {yogurt} 0.010269446 0.1833031 0.056024403 2
## [1290] {other vegetables, => {citrus fruit} 0.010269446 0.2077465 0.028876462 1
##          yogurt} => {other vegetables} 0.005998983 0.3575758 0.016776817 1
## [1291] {citrus fruit, => {rolls/buns} 0.005998983 0.1408115 0.042602949 1
##          yogurt} => {citrus fruit} 0.007219115 0.4303030 0.016776817 1
## [1292] {citrus fruit, => {whole milk} 0.007219115 0.2366667 0.030503305 1
##          whole milk} => {rolls/buns} 0.007219115 0.1274686 0.056634469 1
## [1293] {whole milk, => {citrus fruit} 0.013014743 0.4507042 0.028876462 1
##          yogurt} => {other vegetables} 0.013014743 0.1739130 0.074834774 2
## [1294] {citrus fruit, => {whole milk} 0.013014743 0.2314050 0.024605999 2
##          rolls/buns} => {other vegetables} 0.005693950 0.3636364 0.015658363 2
## [1295] {citrus fruit, => {rolls/buns} 0.005693950 0.2343096 0.024300966 2
##          other vegetables} => {citrus fruit} 0.005693950 0.3831169 0.015658363 2
## [1296] {other vegetables, => {whole milk} 0.005693950 0.3072917 0.019522115 3
##          rolls/buns} => {sausage} 0.005998983 0.1960133 0.030604982 1
## [1297] {rolls/buns, => {shopping bags} 0.005998983 0.2324561 0.023182511 2
##          shopping bags} => {sausage} 0.005388917 0.2000000 0.026944586 2
## [1298] {citrus fruit, => {shopping bags} 0.005388917 0.3441558 0.015658363 1
##          whole milk} => {other vegetables} 0.005388917 0.2324561 0.023182511 2
## [1299] {rolls/buns, => {whole milk} 0.005388917 0.1274686 0.056634469 1
##          whole milk} => {citrus fruit} 0.005388917 0.4266667 0.030503305 2
## [1300] {citrus fruit, => {whole milk} 0.005388917 0.1739130 0.074834774 2
##          other vegetables} => {other vegetables} 0.005388917 0.2314050 0.024605999 2
## [1301] {citrus fruit, => {whole milk} 0.005388917 0.2343096 0.024300966 2
##          whole milk} => {rolls/buns} 0.005388917 0.3072917 0.019522115 3
## [1302] {other vegetables, => {citrus fruit} 0.005388917 0.1960133 0.030604982 1
##          whole milk} => {sausage} 0.005388917 0.2324561 0.023182511 2
## [1303] {sausage, => {shopping bags} 0.005388917 0.2000000 0.026944586 2
##          shopping bags} => {sausage} 0.005388917 0.3441558 0.015658363 1
## [1304] {shopping bags, => {sausage} 0.005388917 0.2324561 0.023182511 2
##          soda} => {shopping bags} 0.005388917 0.1274686 0.056634469 1
## [1305] {sausage, => {sausage} 0.005388917 0.4266667 0.030503305 2
##          soda} => {rolls/buns} 0.005388917 0.1739130 0.074834774 2
## [1306] {sausage, => {rolls/buns} 0.005388917 0.2343096 0.024300966 2
##          shopping bags} => {sausage} 0.005388917 0.3072917 0.019522115 3
## [1307] {rolls/buns, => {shopping bags} 0.005388917 0.1960133 0.030604982 1
##          shopping bags} => {sausage} 0.005388917 0.2324561 0.023182511 2
## [1308] {rolls/buns, => {sausage} 0.005388917 0.2000000 0.026944586 2
##          sausage} => {shopping bags} 0.005388917 0.3441558 0.015658363 1
## [1309] {sausage, => {other vegetables} 0.005388917 0.2324561 0.023182511 2
##          shopping bags} => {sausage} 0.005388917 0.1274686 0.056634469 1
## [1310] {other vegetables, => {sausage} 0.005388917 0.4266667 0.030503305 2
##          shopping bags} => {sausage} 0.005388917 0.1739130 0.074834774 2
## [1311] {other vegetables, => {shopping bags} 0.005388917 0.2343096 0.024300966 2
##          sausage} => {sausage} 0.005388917 0.3072917 0.019522115 3
## [1312] {root vegetables,

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##      shopping bags} => {other vegetables} 0.006609049 0.5158730 0.012811388 2
## [1313] {other vegetables, => {root vegetables} 0.006609049 0.2850877 0.023182511 2
##      shopping bags} => {shopping bags} 0.006609049 0.1394850 0.047381800 1
## [1314] {other vegetables, => {whole milk} 0.005287239 0.4126984 0.012811388 1
##      root vegetables} => {root vegetables} 0.005287239 0.2157676 0.024504321 1
## [1315] {root vegetables, => {shopping bags} 0.005287239 0.1081081 0.048906965 1
##      shopping bags} => {whole milk} 0.006304016 0.2561983 0.024605999 1
## [1316] {shopping bags, => {rolls/buns} 0.006304016 0.3229167 0.019522115 1
##      whole milk} => {soda} 0.006304016 0.1644562 0.038332486 1
## [1317] {root vegetables, => {shopping bags} 0.006304016 0.2324561 0.023182511 1
##      whole milk} => {shopping bags} 0.005388917 0.2190083 0.024605999 1
## [1318] {shopping bags, => {other vegetables} 0.005388917 0.1645963 0.032740214 1
##      soda} => {soda} 0.006812405 0.2768595 0.024605999 1
## [1319] {rolls/buns, => {shopping bags} 0.006812405 0.2780083 0.024504321 1
##      shopping bags} => {whole milk} 0.005388917 0.1700508 0.040061007 1
## [1320] {rolls/buns, => {soda} 0.005388917 0.3533333 0.015251652 1
##      soda} => {shopping bags} 0.005388917 0.2324561 0.023182511 1
## [1321] {shopping bags, => {other vegetables} 0.005388917 0.1241218 0.043416370 1
##      soda} => {soda} 0.005287239 0.3466667 0.015251652 1
## [1322] {other vegetables, => {shopping bags} 0.005287239 0.2157676 0.024504321 1
##      shopping bags} => {whole milk} 0.005287239 0.2708333 0.019522115 1
## [1323] {other vegetables, => {yogurt} 0.005287239 0.2280702 0.023182511 1
##      soda} => {other vegetables} 0.005287239 0.1241050 0.042602949 1
## [1324] {shopping bags, => {rolls/buns} 0.005287239 0.2708333 0.019522115 1
##      soda} => {shopping bags} 0.005287239 0.2157676 0.024504321 1
## [1325] {shopping bags, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      whole milk} => {soda} 0.005287239 0.3112033 0.024504321 1
## [1326] {soda, => {shopping bags} 0.005287239 0.2708333 0.019522115 1
##      whole milk} => {yogurt} 0.005287239 0.2157676 0.024504321 1
## [1327] {shopping bags, => {other vegetables} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      yogurt} => {yogurt} 0.005287239 0.2280702 0.023182511 1
## [1328] {other vegetables, => {rolls/buns} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      shopping bags} => {shopping bags} 0.005287239 0.2708333 0.019522115 1
## [1329] {other vegetables, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      yogurt} => {yogurt} 0.005287239 0.2157676 0.024504321 1
## [1330] {shopping bags, => {other vegetables} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      yogurt} => {shopping bags} 0.005287239 0.2708333 0.019522115 1
## [1331] {shopping bags, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      whole milk} => {yogurt} 0.005287239 0.2157676 0.024504321 1
## [1332] {rolls/buns, => {other vegetables} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      shopping bags} => {rolls/buns} 0.005287239 0.2280702 0.023182511 1
## [1333] {other vegetables, => {shopping bags} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      shopping bags} => {whole milk} 0.005287239 0.2708333 0.019522115 1
## [1334] {other vegetables, => {rolls/buns} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      rolls/buns} => {shopping bags} 0.005287239 0.2157676 0.024504321 1
## [1335] {rolls/buns, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      shopping bags} => {rolls/buns} 0.005287239 0.2280702 0.023182511 1
## [1336] {shopping bags, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      whole milk} => {whole milk} 0.007625826 0.3289474 0.023182511 1
## [1337] {other vegetables, => {whole milk} 0.005287239 0.007625826 0.3289474 0.023182511 1
##      shopping bags} => {whole milk} 0.007625826 0.3112033 0.024504321 1
## [1338] {shopping bags, => {other vegetables} 0.005287239 0.007625826 0.3112033 0.024504321 1
##      whole milk} => {other vegetables} 0.007625826 0.3289474 0.023182511 1
## [1339] {other vegetables,

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##      whole milk}          => {shopping bags}          0.007625826  0.1019022 0.074834774 1
## [1340] {bottled water,    => {other vegetables}    0.005083884  0.4237288 0.011997966 2
##      sausage}             => {bottled water}        0.005083884  0.1886792 0.026944586 1
## [1341] {other vegetables,=> {sausage}            0.005083884  0.2049180 0.024809354 2
##      sausage}              => {other vegetables}    0.005998983  0.4306569 0.013929842 2
## [1342] {bottled water,    => {tropical fruit}       0.005998983  0.2226415 0.026944586 2
##      other vegetables}     => {sausage}            0.005998983  0.1671388 0.035892222 1
## [1343] {sausage,          => {whole milk}           0.007219115  0.5182482 0.013929842 2
##      tropical fruit}       => {tropical fruit}      0.007219115  0.2414966 0.029893238 2
## [1344] {other vegetables,=> {sausage}            0.007219115  0.1706731 0.042297916 1
##      sausage}              => {root vegetables}     0.005185562  0.3469388 0.014946619 2
## [1345] {other vegetables,=> {yogurt}              0.005185562  0.2642487 0.019623793 2
##      tropical fruit}       => {sausage}            0.005185562  0.2007874 0.025826131 2
## [1346] {sausage,          => {other vegetables}    0.006812405  0.4557823 0.014946619 2
##      tropical fruit}       => {root vegetables}     0.006812405  0.2528302 0.026944586 2
## [1347] {sausage,          => {sausage}             0.006812405  0.1437768 0.047381800 1
##      whole milk}           => {whole milk}          0.007727504  0.5170068 0.014946619 2
## [1348] {tropical fruit,   => {root vegetables}     0.007727504  0.2585034 0.029893238 2
##      whole milk}            => {sausage}            0.007727504  0.1580042 0.048906965 1
## [1349] {root vegetables,  => {yogurt}              0.005592272  0.2301255 0.024300966 1
##      sausage}               => {sausage}            0.005592272  0.2849741 0.019623793 1
## [1350] {sausage,          => {soda}                0.005592272  0.2044610 0.027351296 2
##      yogurt}                => {sausage}            0.009659380  0.3974895 0.024300966 2
## [1351] {root vegetables,  => {rolls/buns}         0.009659380  0.3156146 0.030604982 1
##      yogurt}                 => {soda}               0.009659380  0.2519894 0.038332486 2
## [1352] {root vegetables,  => {sausage}            0.007219115  0.2970711 0.024300966 1
##      sausage}                => {other vegetables} 0.007219115  0.2679245 0.026944586 1
## [1353] {other vegetables, => {soda}                0.007219115  0.2679245 0.026944586 1
##      sausage}               => {sausage}            0.005592272  0.2849741 0.019623793 1
## [1354] {other vegetables, => {whole milk}          0.006812405  0.1437768 0.047381800 1
##      root vegetables}       => {root vegetables}     0.006812405  0.2528302 0.026944586 2
## [1355] {root vegetables,  => {sausage}            0.006812405  0.1437768 0.047381800 1
##      sausage}                => {whole milk}          0.007727504  0.5170068 0.014946619 2
## [1356] {sausage,          => {root vegetables}     0.007727504  0.2585034 0.029893238 2
##      whole milk}             => {sausage}            0.007727504  0.1580042 0.048906965 1
## [1357] {root vegetables,  => {yogurt}              0.005592272  0.2301255 0.024300966 1
##      whole milk}            => {sausage}            0.005592272  0.2849741 0.019623793 1
## [1358] {sausage,          => {soda}                0.005592272  0.2044610 0.027351296 2
##      soda}                   => {sausage}            0.009659380  0.3974895 0.024300966 2
## [1359] {sausage,          => {yogurt}              0.005592272  0.3156146 0.030604982 1
##      yogurt}                 => {soda}               0.009659380  0.2519894 0.038332486 2
## [1360] {soda,              => {sausage}            0.007219115  0.2970711 0.024300966 1
##      yogurt}                 => {rolls/buns}         0.007219115  0.2679245 0.026944586 1
## [1361] {sausage,          => {rolls/buns}         0.009659380  0.3974895 0.024300966 2
##      soda}                   => {soda}               0.009659380  0.3156146 0.030604982 1
## [1362] {rolls/buns,        => {sausage}            0.009659380  0.2519894 0.038332486 2
##      sausage}                => {soda}               0.007219115  0.2970711 0.024300966 1
## [1363] {rolls/buns,        => {sausage}            0.009659380  0.2519894 0.038332486 2
##      soda}                   => {other vegetables} 0.007219115  0.2679245 0.026944586 1
## [1364] {sausage,          => {other vegetables} 0.007219115  0.2679245 0.026944586 1
##      soda}                   => {soda}               0.007219115  0.2970711 0.024300966 1
## [1365] {other vegetables, => {soda}                0.007219115  0.2679245 0.026944586 1
##      sausage}               => {soda}               0.007219115  0.2970711 0.024300966 1
## [1366] {other vegetables,

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##      soda}          => {sausage}          0.007219115  0.2204969  0.032740214  2
## [1367] {sausage,
##           soda}          => {whole milk}        0.006710727  0.2761506  0.024300966  1
## [1368] {sausage,
##           whole milk}        => {soda}            0.006710727  0.2244898  0.029893238  1
## [1369] {soda,
##           whole milk}        => {sausage}         0.006710727  0.1675127  0.040061007  1
## [1370] {sausage,
##           yogurt}          => {rolls/buns}       0.005998983  0.3056995  0.019623793  1
## [1371] {rolls/buns,
##           sausage}          => {yogurt}           0.005998983  0.1960133  0.030604982  1
## [1372] {rolls/buns,
##           yogurt}          => {sausage}          0.005998983  0.1745562  0.034367056  1
## [1373] {sausage,
##           yogurt}          => {other vegetables} 0.008134215  0.4145078  0.019623793  2
## [1374] {other vegetables,
##           sausage}          => {yogurt}            0.008134215  0.3018868  0.026944586  2
## [1375] {other vegetables,
##           yogurt}          => {sausage}          0.008134215  0.1873536  0.043416370  1
## [1376] {sausage,
##           yogurt}          => {whole milk}         0.008744281  0.4455959  0.019623793  1
## [1377] {sausage,
##           whole milk}        => {yogurt}           0.008744281  0.2925170  0.029893238  2
## [1378] {whole milk,
##           yogurt}          => {sausage}          0.008744281  0.1560799  0.056024403  1
## [1379] {rolls/buns,
##           sausage}          => {other vegetables} 0.008845958  0.2890365  0.030604982  1
## [1380] {other vegetables,
##           sausage}          => {rolls/buns}        0.008845958  0.3283019  0.026944586  1
## [1381] {other vegetables,
##           rolls/buns}        => {sausage}          0.008845958  0.2076372  0.042602949  2
## [1382] {rolls/buns,
##           sausage}          => {whole milk}         0.009354347  0.3056478  0.030604982  1
## [1383] {sausage,
##           whole milk}        => {rolls/buns}        0.009354347  0.3129252  0.029893238  1
## [1384] {rolls/buns,
##           whole milk}        => {sausage}          0.009354347  0.1651706  0.056634469  1
## [1385] {other vegetables,
##           sausage}          => {whole milk}         0.010167768  0.3773585  0.026944586  1
## [1386] {sausage,
##           whole milk}        => {other vegetables} 0.010167768  0.3401361  0.029893238  1
## [1387] {other vegetables,
##           whole milk}        => {sausage}          0.010167768  0.1358696  0.074834774  1
## [1388] {bottled water,
##           tropical fruit}    => {soda}             0.005185562  0.2802198  0.018505338  1
## [1389] {bottled water,
##           soda}              => {tropical fruit}   0.005185562  0.1789474  0.028978139  1
## [1390] {soda,
##           tropical fruit}    => {bottled water}     0.005185562  0.2487805  0.020843925  2
## [1391] {bottled water,
##           tropical fruit}    => {yogurt}           0.007117438  0.3846154  0.018505338  2
## [1392] {bottled water,
##           yogurt}            => {tropical fruit}  0.007117438  0.3097345  0.022979156  2
## [1393] {tropical fruit,

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##      yogurt} => {bottled water} 0.007117438 0.2430556 0.029283172 2
## [1394] {bottled water, => {rolls/buns} 0.005388917 0.2912088 0.018505338 1
##          tropical fruit} => {tropical fruit} 0.005388917 0.2226891 0.024199288 2
## [1395] {bottled water, => {bottled water} 0.005388917 0.2190083 0.024605999 1
##          rolls/buns} => {other vegetables} 0.006202339 0.3351648 0.018505338 1
## [1396] {rolls/buns, => {tropical fruit} 0.006202339 0.2500000 0.024809354 2
##          tropical fruit} => {bottled water} 0.006202339 0.1728045 0.035892222 1
## [1397] {bottled water, => {whole milk} 0.008032537 0.4340659 0.018505338 1
##          tropical fruit} => {tropical fruit} 0.008032537 0.2337278 0.034367056 2
## [1398] {bottled water, => {bottled water} 0.008032537 0.1899038 0.042297916 1
##          other vegetables} => {other vegetables} 0.007015760 0.4480519 0.015658363 2
## [1399] {other vegetables, => {root vegetables} 0.007015760 0.2827869 0.024809354 2
##          tropical fruit} => {bottled water} 0.007015760 0.1480687 0.047381800 1
## [1400] {bottled water, => {whole milk} 0.007320793 0.4675325 0.015658363 1
##          tropical fruit} => {root vegetables} 0.007320793 0.2130178 0.034367056 1
## [1401] {bottled water, => {bottled water} 0.007320793 0.1496881 0.048906965 1
##          whole milk} => {yogurt} 0.007422471 0.2561404 0.028978139 1
## [1402] {tropical fruit, => {soda} 0.007422471 0.3230088 0.022979156 1
##          whole milk} => {bottled water} 0.007422471 0.2713755 0.027351296 2
## [1403] {bottled water, => {rolls/buns} 0.006812405 0.2350877 0.028978139 1
##          root vegetables} => {soda} 0.006812405 0.2815126 0.024199288 1
## [1404] {bottled water, => {bottled water} 0.006812405 0.1777188 0.038332486 1
##          other vegetables} => {other vegetables} 0.005693950 0.1964912 0.028978139 1
## [1405] {other vegetables, => {soda} 0.005693950 0.2295082 0.024809354 1
##          root vegetables} => {bottled water} 0.005693950 0.1739130 0.032740214 1
## [1406] {bottled water, => {whole milk} 0.007524148 0.2596491 0.028978139 1
##          root vegetables} => {soda} 0.007524148 0.2189349 0.034367056 1
## [1407] {bottled water, => {yogurt} 0.007422471 0.2561404 0.028978139 1
##          whole milk} => {soda} 0.007422471 0.3230088 0.022979156 1
## [1408] {root vegetables, => {bottled water} 0.007422471 0.2713755 0.027351296 2
##          whole milk} => {rolls/buns} 0.006812405 0.2350877 0.028978139 1
## [1409] {bottled water, => {soda} 0.006812405 0.2815126 0.024199288 1
##          soda} => {bottled water} 0.006812405 0.1777188 0.038332486 1
## [1410] {bottled water, => {other vegetables} 0.005693950 0.1964912 0.028978139 1
##          yogurt} => {soda} 0.005693950 0.2295082 0.024809354 1
## [1411] {soda, => {bottled water} 0.007422471 0.2561404 0.028978139 1
##          yogurt} => {rolls/buns} 0.006812405 0.2350877 0.028978139 1
## [1412] {bottled water, => {soda} 0.006812405 0.2815126 0.024199288 1
##          soda} => {soda} 0.006812405 0.1777188 0.038332486 1
## [1413] {bottled water, => {bottled water} 0.006812405 0.1777188 0.038332486 1
##          rolls/buns} => {other vegetables} 0.005693950 0.1964912 0.028978139 1
## [1414] {rolls/buns, => {soda} 0.005693950 0.2295082 0.024809354 1
##          soda} => {bottled water} 0.006812405 0.1777188 0.038332486 1
## [1415] {bottled water, => {soda} 0.005693950 0.1964912 0.028978139 1
##          soda} => {other vegetables} 0.005693950 0.2295082 0.024809354 1
## [1416] {bottled water, => {soda} 0.005693950 0.2295082 0.024809354 1
##          other vegetables} => {bottled water} 0.005693950 0.1739130 0.032740214 1
## [1417] {other vegetables, => {bottled water} 0.005693950 0.1739130 0.032740214 1
##          soda} => {whole milk} 0.007524148 0.2596491 0.028978139 1
## [1418] {bottled water, => {soda} 0.007524148 0.2596491 0.028978139 1
##          soda} => {whole milk} 0.007524148 0.2189349 0.034367056 1
## [1419] {bottled water, => {soda} 0.007524148 0.2189349 0.034367056 1
##          whole milk} => {soda}
## [1420] {soda,

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##      whole milk}          => {bottled water}          0.007524148  0.1878173 0.040061007 1
## [1421] {bottled water,
##           yogurt}          => {rolls/buns}          0.007117438  0.3097345 0.022979156 1
## [1422] {bottled water,
##           rolls/buns}        => {yogurt}            0.007117438  0.2941176 0.024199288 2
## [1423] {rolls/buns,
##           yogurt}          => {bottled water}          0.007117438  0.2071006 0.034367056 1
## [1424] {bottled water,
##           yogurt}          => {other vegetables} 0.008134215  0.3539823 0.022979156 1
## [1425] {bottled water,
##           other vegetables} => {yogurt}            0.008134215  0.3278689 0.024809354 2
## [1426] {other vegetables,
##           yogurt}          => {bottled water}          0.008134215  0.1873536 0.043416370 1
## [1427] {bottled water,
##           yogurt}          => {whole milk}           0.009659380  0.4203540 0.022979156 1
## [1428] {bottled water,
##           whole milk}        => {yogurt}            0.009659380  0.2810651 0.034367056 2
## [1429] {whole milk,
##           yogurt}          => {bottled water}          0.009659380  0.1724138 0.056024403 1
## [1430] {bottled water,
##           rolls/buns}        => {other vegetables} 0.007320793  0.3025210 0.024199288 1
## [1431] {bottled water,
##           other vegetables} => {rolls/buns}          0.007320793  0.2950820 0.024809354 1
## [1432] {other vegetables,
##           rolls/buns}        => {bottled water}          0.007320793  0.1718377 0.042602949 1
## [1433] {bottled water,
##           rolls/buns}        => {whole milk}           0.008744281  0.3613445 0.024199288 1
## [1434] {bottled water,
##           whole milk}        => {rolls/buns}          0.008744281  0.2544379 0.034367056 1
## [1435] {rolls/buns,
##           whole milk}        => {bottled water}          0.008744281  0.1543986 0.056634469 1
## [1436] {bottled water,
##           other vegetables} => {whole milk}           0.010777834  0.4344262 0.024809354 1
## [1437] {bottled water,
##           whole milk}        => {other vegetables} 0.010777834  0.3136095 0.034367056 1
## [1438] {other vegetables,
##           whole milk}        => {bottled water}          0.010777834  0.1440217 0.074834774 1
## [1439] {root vegetables,
##           tropical fruit}    => {yogurt}            0.008134215  0.3864734 0.021047280 2
## [1440] {tropical fruit,
##           yogurt}          => {root vegetables} 0.008134215  0.2777778 0.029283172 2
## [1441] {root vegetables,
##           yogurt}          => {tropical fruit}    0.008134215  0.3149606 0.025826131 3
## [1442] {root vegetables,
##           tropical fruit}   => {rolls/buns}          0.005897306  0.2801932 0.021047280 1
## [1443] {rolls/buns,
##           tropical fruit}   => {root vegetables} 0.005897306  0.2396694 0.024605999 2
## [1444] {rolls/buns,
##           root vegetables}  => {tropical fruit}    0.005897306  0.2426778 0.024300966 2
## [1445] {root vegetables,
##           tropical fruit}   => {other vegetables} 0.012302999  0.5845411 0.021047280 3
## [1446] {other vegetables,
##           tropical fruit}   => {root vegetables} 0.012302999  0.3427762 0.035892222 3
## [1447] {other vegetables,

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##      root vegetables}          => {tropical fruit}          0.012302999  0.2596567 0.047381800 2
## [1448] {root vegetables,       => {whole milk}           0.011997966  0.5700483 0.021047280 2
##         tropical fruit}        => {root vegetables}        0.011997966  0.2836538 0.042297916 2
## [1449] {tropical fruit,       => {tropical fruit}          0.011997966  0.2453222 0.048906965 2
##         whole milk}           => {soda,                  0.006609049  0.3170732 0.020843925 2
## [1450] {root vegetables,       => {tropical fruit}          0.006609049  0.2256944 0.029283172 1
##         whole milk}           => {yogurt}                0.006609049  0.2416357 0.027351296 2
## [1451] {soda,                 => {soda}                  0.005388917  0.2585366 0.020843925 1
##         tropical fruit}        => {tropical fruit}          0.005388917  0.2190083 0.024605999 1
## [1452] {tropical fruit,       => {rolls/buns}            0.005388917  0.1405836 0.038332486 1
##         yogurt}               => {soda}                  0.007219115  0.3463415 0.020843925 1
## [1453] {soda,                 => {tropical fruit}          0.007219115  0.2011331 0.035892222 1
##         yogurt}               => {other vegetables}     0.007219115  0.2204969 0.032740214 2
## [1454] {soda,                 => {tropical fruit}          0.007829181  0.3756098 0.020843925 1
##         tropical fruit}        => {whole milk}            0.007829181  0.1850962 0.042297916 1
## [1455] {rolls/buns,          => {soda}                  0.007829181  0.1954315 0.040061007 1
##         tropical fruit}        => {tropical fruit}          0.008744281  0.2986111 0.029283172 1
## [1456] {rolls/buns,          => {rolls/buns}            0.008744281  0.3553719 0.024605999 2
##         soda}                 => {yogurt}                0.008744281  0.2544379 0.034367056 2
## [1457] {soda,                 => {tropical fruit}          0.008744281  0.4201389 0.029283172 2
##         tropical fruit}        => {other vegetables}     0.008744281  0.3427762 0.035892222 2
## [1458] {other vegetables,    => {yogurt}                0.008744281  0.2833724 0.043416370 2
##         tropical fruit}        => {tropical fruit}          0.008744281  0.5173611 0.029283172 2
## [1459] {other vegetables,    => {whole milk}            0.008744281  0.3581731 0.042297916 2
##         soda}                 => {yogurt}                0.008744281  0.2704174 0.056024403 2
## [1460] {soda,                 => {other vegetables}     0.007829181  0.3181818 0.024605999 1
##         tropical fruit}        => {rolls/buns}            0.007829181  0.2181303 0.035892222 1
## [1461] {tropical fruit,       => {rolls/buns}            0.007829181  0.12302999 0.4201389 0.029283172 2
##         whole milk}           => {yogurt}                0.007829181  0.3427762 0.035892222 2
## [1462] {soda,                 => {tropical fruit}          0.007829181  0.2833724 0.043416370 2
##         whole milk}           => {yogurt}                0.007829181  0.5173611 0.029283172 2
## [1463] {tropical fruit,       => {tropical fruit}          0.007829181  0.3581731 0.042297916 2
##         yogurt}               => {rolls/buns}            0.007829181  0.2704174 0.056024403 2
## [1464] {rolls/buns,          => {yogurt}                0.007829181  0.3181818 0.024605999 1
##         tropical fruit}        => {tropical fruit}          0.007829181  0.2181303 0.035892222 1
## [1465] {rolls/buns,          => {other vegetables}     0.007829181  0.12302999 0.4201389 0.029283172 2
##         yogurt}               => {yogurt}                0.007829181  0.3427762 0.035892222 2
## [1466] {tropical fruit,       => {tropical fruit}          0.007829181  0.2833724 0.043416370 2
##         yogurt}               => {other vegetables}     0.007829181  0.5173611 0.029283172 2
## [1467] {other vegetables,    => {yogurt}                0.007829181  0.3581731 0.042297916 2
##         tropical fruit}        => {tropical fruit}          0.007829181  0.2704174 0.056024403 2
## [1468] {other vegetables,    => {other vegetables}     0.007829181  0.3181818 0.024605999 1
##         yogurt}               => {rolls/buns}            0.007829181  0.2181303 0.035892222 1
## [1469] {tropical fruit,       => {tropical fruit}          0.007829181  0.2833724 0.043416370 2
##         yogurt}               => {whole milk}            0.007829181  0.5173611 0.029283172 2
## [1470] {tropical fruit,       => {yogurt}                0.007829181  0.3581731 0.042297916 2
##         whole milk}           => {tropical fruit}          0.007829181  0.2704174 0.056024403 2
## [1471] {whole milk,          => {tropical fruit}          0.007829181  0.3181818 0.024605999 1
##         yogurt}               => {other vegetables}     0.007829181  0.2181303 0.035892222 1
## [1472] {rolls/buns,          => {tropical fruit}          0.007829181  0.12302999 0.4201389 0.029283172 2
##         tropical fruit}        => {other vegetables}     0.007829181  0.3427762 0.035892222 2
## [1473] {other vegetables,    => {rolls/buns}            0.007829181  0.2833724 0.043416370 2
##         tropical fruit}        => {yogurt}                0.007829181  0.5173611 0.029283172 2
## [1474] {other vegetables,

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##      rolls/buns}          => {tropical fruit}          0.007829181 0.1837709 0.042602949 1
## [1475] {rolls/buns,       => {whole milk}           0.010981190 0.4462810 0.024605999 1
##         tropical fruit}   => {rolls/buns}           0.010981190 0.2596154 0.042297916 1
## [1476] {tropical fruit,  => {tropical fruit}          0.010981190 0.1938959 0.056634469 1
##         whole milk}        => {whole milk}           0.017081851 0.4759207 0.035892222 1
## [1477] {rolls/buns,       => {other vegetables}     0.017081851 0.4038462 0.042297916 2
##         whole milk}        => {tropical fruit}          0.017081851 0.2282609 0.074834774 2
## [1478] {other vegetables,=> {whole milk}           0.008235892 0.4426230 0.018607016 2
##         tropical fruit}    => {other vegetables}     0.008235892 0.1738197 0.047381800 0
## [1479] {tropical fruit,   => {soda}                  0.008235892 0.2515528 0.032740214 2
##         whole milk}        => {root vegetables}     0.008134215 0.4371585 0.018607016 1
## [1480] {other vegetables,=> {whole milk}           0.008134215 0.1663202 0.048906965 0
##         whole milk}        => {other vegetables}     0.008134215 0.2030457 0.040061007 1
## [1481] {root vegetables,  => {soda}                  0.007219115 0.2795276 0.025826131 1
##         soda}               => {rolls/buns}          0.007219115 0.2970711 0.024300966 2
## [1482] {other vegetables,=> {root vegetables}     0.007219115 0.2100592 0.034367056 1
##         root vegetables}   => {yogurt}                0.012913066 0.5000000 0.025826131 2
## [1483] {other vegetables,=> {other vegetables}     0.012913066 0.2725322 0.047381800 1
##         soda}               => {yogurt}                0.012913066 0.2974239 0.043416370 2
## [1484] {root vegetables,  => {whole milk}           0.014539908 0.5629921 0.025826131 2
##         soda}               => {root vegetables}     0.014539908 0.2972973 0.048906965 2
## [1485] {root vegetables,  => {yogurt}                0.014539908 0.2595281 0.056024403 2
##         whole milk}        => {other vegetables}     0.012201322 0.5020921 0.024300966 2
## [1486] {soda,              => {rolls/buns}          0.012201322 0.2575107 0.047381800 1
##         whole milk}        => {root vegetables}     0.012201322 0.2863962 0.042602949 2
## [1487] {root vegetables,  => {whole milk}           0.012709710 0.5230126 0.024300966 2
##         yogurt}             => {other vegetables}     0.012709710 0.2598753 0.048906965 1
## [1488] {rolls/buns,        => {rolls/buns}          0.007219115 0.2795276 0.025826131 1
##         root vegetables}   => {yogurt}                0.007219115 0.2970711 0.024300966 2
## [1489] {rolls/buns,        => {root vegetables}     0.007219115 0.2100592 0.034367056 1
##         yogurt}             => {yogurt}                0.012913066 0.2725322 0.047381800 1
## [1490] {root vegetables,  => {other vegetables}     0.012913066 0.2974239 0.043416370 2
##         yogurt}             => {yogurt}                0.012913066 0.2595281 0.056024403 2
## [1491] {other vegetables,=> {root vegetables}     0.014539908 0.5629921 0.025826131 2
##         root vegetables}   => {yogurt}                0.014539908 0.2972973 0.048906965 2
## [1492] {other vegetables,=> {yogurt}                0.014539908 0.2595281 0.056024403 2
##         yogurt}            => {root vegetables}     0.012201322 0.5020921 0.024300966 2
## [1493] {root vegetables,  => {whole milk}           0.012709710 0.5230126 0.024300966 2
##         yogurt}             => {yogurt}                0.012709710 0.2598753 0.048906965 1
## [1494] {root vegetables,  => {yogurt}                0.012709710 0.2598753 0.048906965 1
##         whole milk}        => {root vegetables}     0.012201322 0.5020921 0.024300966 2
## [1495] {whole milk,        => {root vegetables}     0.012201322 0.2575107 0.047381800 1
##         yogurt}             => {yogurt}                0.012201322 0.2863962 0.042602949 2
## [1496] {rolls/buns,        => {other vegetables}     0.012709710 0.5230126 0.024300966 2
##         root vegetables}   => {rolls/buns}          0.012709710 0.2598753 0.048906965 1
## [1497] {other vegetables,=> {root vegetables}     0.012709710 0.2575107 0.047381800 1
##         root vegetables}   => {rolls/buns}          0.012709710 0.2863962 0.042602949 2
## [1498] {other vegetables,=> {root vegetables}     0.012709710 0.5230126 0.024300966 2
##         rolls/buns}         => {whole milk}           0.012709710 0.2598753 0.048906965 1
## [1499] {rolls/buns,        => {whole milk}           0.012709710 0.5230126 0.024300966 2
##         root vegetables}   => {rolls/buns}          0.012709710 0.2598753 0.048906965 1
## [1500] {root vegetables,  => {whole milk}           0.012709710 0.5230126 0.024300966 2
##         whole milk}        => {rolls/buns}          0.012709710 0.2598753 0.048906965 1
## [1501] {rolls/buns,

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##      whole milk}          => {root vegetables}          0.012709710  0.2244165  0.056634469  2
## [1502] {other vegetables, => {whole milk}              0.023182511  0.4892704  0.047381800  1
##           root vegetables}=> {other vegetables}          0.023182511  0.4740125  0.048906965  2
## [1503] {root vegetables, => {root vegetables}          0.023182511  0.3097826  0.074834774  2
##           whole milk}          => {root vegetables}          0.008642603  0.3159851  0.027351296  1
## [1504] {other vegetables, => {rolls/buns}              0.008642603  0.2254642  0.038332486  1
##           whole milk}          => {yogurt}                0.008642603  0.2514793  0.034367056  1
## [1505] {soda,                  => {soda}                 0.008642603  0.008337570  0.3048327  0.027351296  1
##           yogurt}          => {other vegetables}          0.008642603  0.2546584  0.032740214  1
## [1506] {rolls/buns,          => {yogurt}                0.008642603  0.008337570  0.1920375  0.043416370  1
##           soda}              => {soda}                 0.008642603  0.010472801  0.3828996  0.027351296  1
## [1507] {rolls/buns,          => {whole milk}             0.010472801  0.2614213  0.040061007  1
##           yogurt}          => {yogurt}                0.010472801  0.010472801  0.1869328  0.056024403  1
## [1508] {soda,                  => {soda}                 0.010472801  0.009862735  0.2572944  0.038332486  1
##           yogurt}          => {other vegetables}          0.010472801  0.009862735  0.3012422  0.032740214  1
## [1509] {other vegetables,    => {rolls/buns}             0.009862735  0.009862735  0.2315036  0.042602949  1
##           soda}              => {soda}                 0.009862735  0.008845958  0.2307692  0.038332486  0
## [1510] {other vegetables,    => {whole milk}             0.009862735  0.008845958  0.1561939  0.056634469  0
##           soda}              => {soda}                 0.009862735  0.013929842  0.4254658  0.032740214  1
## [1511] {soda,                  => {whole milk}             0.013929842  0.013929842  0.3477157  0.040061007  1
##           yogurt}          => {other vegetables}          0.013929842  0.011489578  0.3343195  0.034367056  1
## [1512] {soda,                  => {soda}                 0.013929842  0.011489578  0.1861413  0.074834774  1
##           whole milk}         => {other vegetables}          0.011489578  0.011489578  0.2646370  0.043416370  1
## [1513] {whole milk,          => {yogurt}                0.011489578  0.011489578  0.2696897  0.042602949  1
##           yogurt}          => {soda}                 0.011489578  0.015556685  0.4526627  0.034367056  1
## [1514] {rolls/buns,          => {whole milk}             0.015556685  0.015556685  0.2776770  0.056024403  1
##           soda}              => {rolls/buns}            0.015556685  0.008845958  0.2208122  0.040061007  1
## [1515] {other vegetables,    => {soda}                 0.008845958  0.008845958  0.1561939  0.056634469  0
##           soda}              => {rolls/buns}            0.008845958  0.013929842  0.4254658  0.032740214  1
## [1516] {other vegetables,    => {soda}                 0.013929842  0.013929842  0.3477157  0.040061007  1
##           rolls/buns}         => {whole milk}             0.013929842  0.011489578  0.3343195  0.034367056  1
## [1517] {rolls/buns,          => {soda}                 0.011489578  0.011489578  0.1861413  0.074834774  1
##           soda}              => {whole milk}             0.011489578  0.011489578  0.2646370  0.043416370  1
## [1518] {soda,                  => {rolls/buns}            0.011489578  0.008845958  0.2208122  0.040061007  1
##           whole milk}         => {soda}                 0.008845958  0.008845958  0.1561939  0.056634469  0
## [1519] {rolls/buns,          => {whole milk}             0.008845958  0.008845958  0.1561939  0.056634469  0
##           whole milk}         => {soda}                 0.008845958  0.013929842  0.4254658  0.032740214  1
## [1520] {other vegetables,    => {whole milk}             0.013929842  0.013929842  0.3477157  0.040061007  1
##           soda}              => {other vegetables}          0.013929842  0.011489578  0.3343195  0.034367056  1
## [1521] {soda,                  => {soda}                 0.013929842  0.011489578  0.1861413  0.074834774  1
##           whole milk}         => {other vegetables}          0.011489578  0.011489578  0.2646370  0.043416370  1
## [1522] {other vegetables,    => {soda}                 0.011489578  0.011489578  0.1861413  0.074834774  1
##           whole milk}         => {rolls/buns}            0.011489578  0.011489578  0.2646370  0.043416370  1
## [1523] {rolls/buns,          => {yogurt}                0.011489578  0.011489578  0.2646370  0.043416370  1
##           yogurt}          => {other vegetables}          0.011489578  0.011489578  0.2646370  0.043416370  1
## [1524] {other vegetables,    => {rolls/buns}            0.011489578  0.011489578  0.2646370  0.043416370  1
##           yogurt}          => {yogurt}                0.011489578  0.011489578  0.2646370  0.043416370  1
## [1525] {other vegetables,    => {yogurt}                0.011489578  0.011489578  0.2646370  0.043416370  1
##           rolls/buns}         => {whole milk}             0.011489578  0.011489578  0.2646370  0.043416370  1
## [1526] {rolls/buns,          => {yogurt}                0.011489578  0.011489578  0.2646370  0.043416370  1
##           yogurt}          => {whole milk}             0.011489578  0.015556685  0.4526627  0.034367056  1
## [1527] {whole milk,          => {whole milk}             0.015556685  0.015556685  0.2776770  0.056024403  1
##           yogurt}          => {rolls/buns}            0.015556685  0.015556685  0.2776770  0.056024403  1
## [1528] {rolls/buns,

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##      whole milk}          => {yogurt}          0.015556685  0.2746858  0.056634469 1
## [1529] {other vegetables,
##           yogurt}          => {whole milk}        0.022267412  0.5128806  0.043416370 2
## [1530] {whole milk,
##           yogurt}          => {other vegetables} 0.022267412  0.3974592  0.056024403 2
## [1531] {other vegetables,
##           whole milk}        => {yogurt}          0.022267412  0.2975543  0.074834774 2
## [1532] {other vegetables,
##           rolls/buns}        => {whole milk}        0.017895272  0.4200477  0.042602949 1
## [1533] {rolls/buns,
##           whole milk}        => {other vegetables} 0.017895272  0.3159785  0.056634469 1
## [1534] {other vegetables,
##           whole milk}        => {rolls/buns}       0.017895272  0.2391304  0.074834774 1
## [1535] {fruit/vegetable juice,
##           other vegetables,
##           yogurt}            => {whole milk}        0.005083884  0.6172840  0.008235892 2
## [1536] {fruit/vegetable juice,
##           whole milk,
##           yogurt}            => {other vegetables} 0.005083884  0.5376344  0.009456024 2
## [1537] {fruit/vegetable juice,
##           other vegetables,
##           whole milk}
##           yogurt}            => {yogurt}          0.005083884  0.4854369  0.010472801 3
## [1538] {other vegetables,
##           whole milk,
##           yogurt}            => {fruit/vegetable juice} 0.005083884  0.2283105  0.022267412 3
## [1539] {other vegetables,
##           root vegetables,
##           whipped/sour cream} => {whole milk}        0.005185562  0.6071429  0.008540925 2
## [1540] {root vegetables,
##           whipped/sour cream,
##           whole milk}         => {other vegetables} 0.005185562  0.5483871  0.009456024 2
## [1541] {other vegetables,
##           whipped/sour cream,
##           whole milk}         => {root vegetables} 0.005185562  0.3541667  0.014641586 3
## [1542] {other vegetables,
##           root vegetables,
##           whole milk}         => {whipped/sour cream} 0.005185562  0.2236842  0.023182511 3
## [1543] {other vegetables,
##           whipped/sour cream,
##           yogurt}             => {whole milk}        0.005592272  0.5500000  0.010167768 2
## [1544] {whipped/sour cream,
##           whole milk,
##           yogurt}             => {other vegetables} 0.005592272  0.5140187  0.010879512 2
## [1545] {other vegetables,
##           whipped/sour cream,
##           whole milk}         => {yogurt}          0.005592272  0.3819444  0.014641586 2
## [1546] {other vegetables,
##           whole milk,
##           yogurt}             => {whipped/sour cream} 0.005592272  0.2511416  0.022267412 3
## [1547] {other vegetables,
##           pip fruit,
##           root vegetables}   => {whole milk}        0.005490595  0.6750000  0.008134215 2
## [1548] {pip fruit,
##           root vegetables,

```

```

##      whole milk}          => {other vegetables} 0.005490595 0.6136364 0.008947636 3
## [1549] {other vegetables,
##           pip fruit,
##           whole milk}          => {root vegetables} 0.005490595 0.4060150 0.013523132 3
## [1550] {other vegetables,
##           root vegetables,
##           whole milk}          => {pip fruit}      0.005490595 0.2368421 0.023182511 3
## [1551] {other vegetables,
##           pip fruit,
##           yogurt}              => {whole milk}     0.005083884 0.6250000 0.008134215 2
## [1552] {pip fruit,
##           whole milk,
##           yogurt}              => {other vegetables} 0.005083884 0.5319149 0.009557702 2
## [1553] {other vegetables,
##           pip fruit,
##           whole milk}          => {yogurt}        0.005083884 0.3759398 0.013523132 2
## [1554] {other vegetables,
##           whole milk,
##           yogurt}              => {pip fruit}      0.005083884 0.2283105 0.022267412 3
## [1555] {citrus fruit,
##           other vegetables,
##           root vegetables}      => {whole milk}     0.005795628 0.5588235 0.010371124 2
## [1556] {citrus fruit,
##           root vegetables,
##           whole milk}          => {other vegetables} 0.005795628 0.6333333 0.009150991 3
## [1557] {citrus fruit,
##           other vegetables,
##           whole milk}          => {root vegetables} 0.005795628 0.4453125 0.013014743 4
## [1558] {other vegetables,
##           root vegetables,
##           whole milk}          => {citrus fruit}    0.005795628 0.2500000 0.023182511 3
## [1559] {root vegetables,
##           tropical fruit,
##           yogurt}              => {whole milk}     0.005693950 0.7000000 0.008134215 2
## [1560] {root vegetables,
##           tropical fruit,
##           whole milk}          => {yogurt}        0.005693950 0.4745763 0.011997966 3
## [1561] {tropical fruit,
##           whole milk,
##           yogurt}              => {root vegetables} 0.005693950 0.3758389 0.015149975 3
## [1562] {root vegetables,
##           whole milk,
##           yogurt}              => {tropical fruit} 0.005693950 0.3916084 0.014539908 3
## [1563] {other vegetables,
##           root vegetables,
##           tropical fruit}      => {whole milk}     0.007015760 0.5702479 0.012302999 2
## [1564] {root vegetables,
##           tropical fruit,
##           whole milk}          => {other vegetables} 0.007015760 0.5847458 0.011997966 3
## [1565] {other vegetables,
##           tropical fruit,
##           whole milk}          => {root vegetables} 0.007015760 0.4107143 0.017081851 3
## [1566] {other vegetables,
##           root vegetables,

```

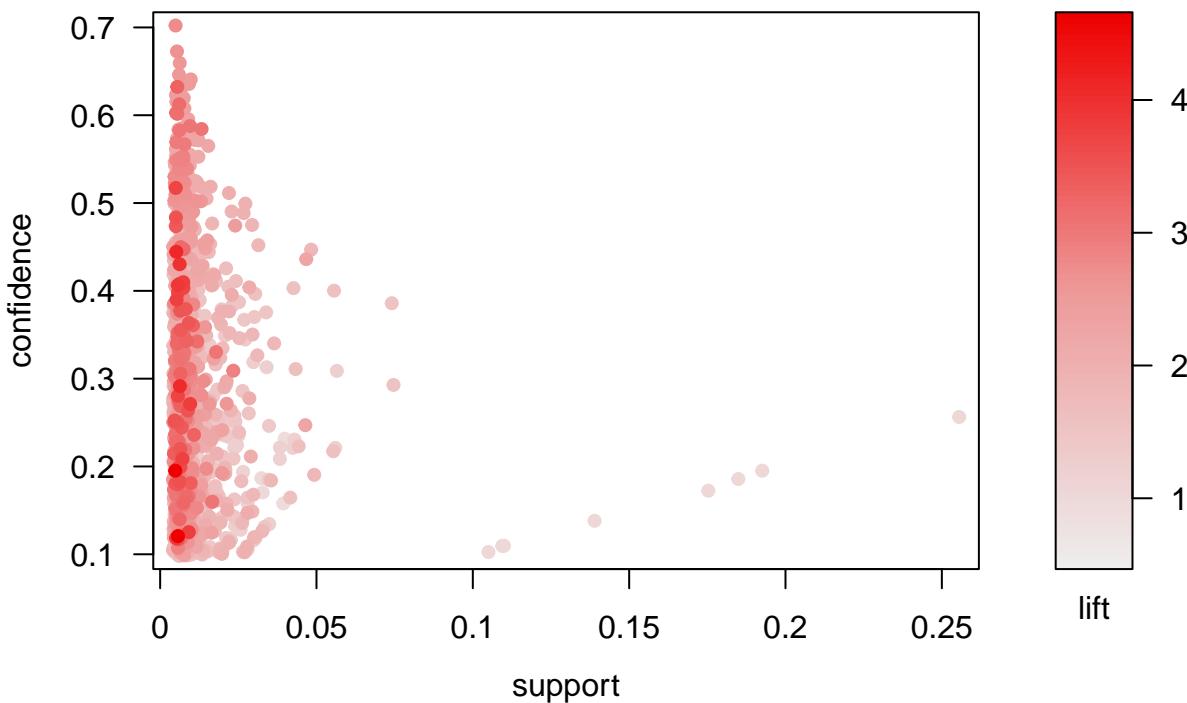
```

##      whole milk}          => {tropical fruit}          0.007015760 0.3026316 0.023182511 2
## [1567] {other vegetables,
##           tropical fruit,
##           yogurt}          => {whole milk}          0.007625826 0.6198347 0.012302999 2
## [1568] {tropical fruit,
##           whole milk,
##           yogurt}          => {other vegetables} 0.007625826 0.5033557 0.015149975 2
## [1569] {other vegetables,
##           tropical fruit,
##           whole milk}        => {yogurt}          0.007625826 0.4464286 0.017081851 3
## [1570] {other vegetables,
##           whole milk,
##           yogurt}          => {tropical fruit}          0.007625826 0.3424658 0.022267412 3
## [1571] {other vegetables,
##           root vegetables,
##           yogurt}          => {whole milk}          0.007829181 0.6062992 0.012913066 2
## [1572] {root vegetables,
##           whole milk,
##           yogurt}          => {other vegetables} 0.007829181 0.5384615 0.014539908 2
## [1573] {other vegetables,
##           root vegetables,
##           whole milk}        => {yogurt}          0.007829181 0.3377193 0.023182511 2
## [1574] {other vegetables,
##           whole milk,
##           yogurt}          => {root vegetables} 0.007829181 0.3515982 0.022267412 3
## [1575] {other vegetables,
##           rolls/buns,
##           root vegetables}  => {whole milk}          0.006202339 0.5083333 0.012201322 1
## [1576] {rolls/buns,
##           root vegetables,
##           whole milk}        => {other vegetables} 0.006202339 0.4880000 0.012709710 2
## [1577] {other vegetables,
##           root vegetables,
##           whole milk}        => {rolls/buns}          0.006202339 0.2675439 0.023182511 1
## [1578] {other vegetables,
##           rolls/buns,
##           whole milk}        => {root vegetables} 0.006202339 0.3465909 0.017895272 3
## [1579] {other vegetables,
##           rolls/buns,
##           yogurt}          => {whole milk}          0.005998983 0.5221239 0.011489578 2
## [1580] {rolls/buns,
##           whole milk,
##           yogurt}          => {other vegetables} 0.005998983 0.3856209 0.015556685 1
## [1581] {other vegetables,
##           whole milk,
##           yogurt}          => {rolls/buns}          0.005998983 0.2694064 0.022267412 1
## [1582] {other vegetables,
##           rolls/buns,
##           whole milk}        => {yogurt}          0.005998983 0.3352273 0.017895272 2
# plot all the rules in (support, confidence) space
# notice that high lift rules tend to have low support
plot(groceries_rule)

## To reduce overplotting, jitter is added! Use jitter = 0 to prevent jitter.

```

Scatter plot for 1582 rules



```
## Choose a subset
inspect(subset(groceries_rule, subset=lift > 3))
```

##	lhs	rhs	support	confidence	coverage	lift
[1]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429	3.956477
[2]	{ham}	=> {white bread}	0.005083884	0.1953125	0.026029487	4.639851
[3]	{white bread}	=> {ham}	0.005083884	0.1207729	0.042094560	4.639851
[4]	{sliced cheese}	=> {sausage}	0.007015760	0.2863071	0.024504321	3.047435
[5]	{berries}	=> {whipped/sour cream}	0.009049314	0.2721713	0.033248602	3.796886
[6]	{whipped/sour cream}	=> {berries}	0.009049314	0.1262411	0.071682766	3.796886
[7]	{hygiene articles}	=> {napkins}	0.006100661	0.1851852	0.032943569	3.536498
[8]	{napkins}	=> {hygiene articles}	0.006100661	0.1165049	0.052364006	3.536498
[9]	{waffles}	=> {chocolate}	0.005795628	0.1507937	0.038434164	3.039048
[10]	{chocolate}	=> {waffles}	0.005795628	0.1168033	0.049618709	3.039048
[11]	{chicken}	=> {frozen vegetables}	0.006710727	0.1563981	0.042907982	3.251956
[12]	{frozen vegetables}	=> {chicken}	0.006710727	0.1395349	0.048093543	3.251956
[13]	{beef}	=> {root vegetables}	0.017386884	0.3313953	0.052465684	3.040367
[14]	{root vegetables}	=> {beef}	0.017386884	0.1595149	0.108998475	3.040367
[15]	{onions,					
	root vegetables}	=> {other vegetables}	0.005693950	0.6021505	0.009456024	3.112008
[16]	{onions,					
	other vegetables}	=> {root vegetables}	0.005693950	0.4000000	0.014234875	3.669776
[17]	{other vegetables,					
	root vegetables}	=> {onions}	0.005693950	0.1201717	0.047381800	3.875044
[18]	{other vegetables,					
	yogurt}	=> {cream cheese}	0.005287239	0.1217799	0.043416370	3.071038
[19]	{chicken,					
	whole milk}	=> {root vegetables}	0.005998983	0.3410405	0.017590239	3.128855
[20]	{frozen vegetables,					

```

##      other vegetables} => {root vegetables} 0.006100661 0.3428571 0.017793594 3.145522
## [21] {beef,
##      other vegetables} => {root vegetables} 0.007930859 0.4020619 0.019725470 3.688692
## [22] {other vegetables,
##      root vegetables} => {beef} 0.007930859 0.1673820 0.047381800 3.190313
## [23] {beef,
##      whole milk} => {root vegetables} 0.008032537 0.3779904 0.021250635 3.467851
## [24] {root vegetables,
##      whole milk} => {beef} 0.008032537 0.1642412 0.048906965 3.130449
## [25] {curd,
##      whole milk} => {whipped/sour cream} 0.005897306 0.2256809 0.026131164 3.148329
## [26] {whipped/sour cream,
##      whole milk} => {curd} 0.005897306 0.1829653 0.032231825 3.434091
## [27] {curd,
##      tropical fruit} => {yogurt} 0.005287239 0.5148515 0.010269446 3.690645
## [28] {tropical fruit,
##      yogurt} => {curd} 0.005287239 0.1805556 0.029283172 3.388862
## [29] {whole milk,
##      yogurt} => {curd} 0.010066090 0.1796733 0.056024403 3.372304
## [30] {margarine,
##      whole milk} => {domestic eggs} 0.005185562 0.2142857 0.024199288 3.377404
## [31] {butter,
##      whole milk} => {domestic eggs} 0.005998983 0.2177122 0.027554652 3.431409
## [32] {domestic eggs,
##      whole milk} => {butter} 0.005998983 0.2000000 0.029994916 3.609174
## [33] {butter,
##      other vegetables} => {whipped/sour cream} 0.005795628 0.2893401 0.020030503 4.036397
## [34] {other vegetables,
##      whipped/sour cream} => {butter} 0.005795628 0.2007042 0.028876462 3.621883
## [35] {butter,
##      whole milk} => {whipped/sour cream} 0.006710727 0.2435424 0.027554652 3.397503
## [36] {whipped/sour cream,
##      whole milk} => {butter} 0.006710727 0.2082019 0.032231825 3.757185
## [37] {citrus fruit,
##      whole milk} => {butter} 0.005083884 0.1666667 0.030503305 3.007645
## [38] {butter,
##      other vegetables} => {root vegetables} 0.006609049 0.3299492 0.020030503 3.027100
## [39] {root vegetables,
##      whole milk} => {butter} 0.008235892 0.1683992 0.048906965 3.038910
## [40] {whole milk,
##      yogurt} => {butter} 0.009354347 0.1669691 0.056024403 3.013104
## [41] {domestic eggs,
##      other vegetables} => {whipped/sour cream} 0.005083884 0.2283105 0.022267412 3.185012
## [42] {domestic eggs,
##      other vegetables} => {root vegetables} 0.007320793 0.3287671 0.022267412 3.016254
## [43] {pip fruit,
##      whipped/sour cream} => {other vegetables} 0.005592272 0.6043956 0.009252669 3.123610
## [44] {tropical fruit,
##      whipped/sour cream} => {yogurt} 0.006202339 0.4485294 0.013828165 3.215224
## [45] {other vegetables,
##      tropical fruit} => {whipped/sour cream} 0.007829181 0.2181303 0.035892222 3.042995
## [46] {root vegetables,
##      yogurt} => {whipped/sour cream} 0.006405694 0.2480315 0.025826131 3.460127
## [47] {other vegetables,

```

```

##      yogurt}          => {whipped/sour cream} 0.010167768 0.2341920 0.043416370 3.267062
## [48] {citrus fruit,    => {tropical fruit}   0.005592272 0.4044118 0.013828165 3.854060
##      pip fruit}        => {citrus fruit}     0.005592272 0.2736318 0.020437214 3.306105
## [49] {pip fruit,      => {pip fruit}       0.005592272 0.2806122 0.019928826 3.709437
##      tropical fruit}   => {tropical fruit} 0.005287239 0.3398693 0.015556685 3.238967
## [50] {citrus fruit,    => {pip fruit}       0.005287239 0.2512077 0.021047280 3.320737
##      tropical fruit}   => {tropical fruit} 0.006405694 0.3559322 0.017996950 3.392048
## [51] {pip fruit,      => {tropical fruit} 0.009456024 0.3618677 0.026131164 3.448613
##      root vegetables}  => {tropical fruit} 0.009456024 0.2634561 0.035892222 3.482649
## [52] {root vegetables,=> {pip fruit}       0.005693950 0.3218391 0.017691917 3.067139
##      tropical fruit}   => {pip fruit}       0.005693950 0.2705314 0.021047280 3.268644
## [53] {pip fruit,      => {tropical fruit} 0.009049314 0.2521246 0.035892222 3.046248
##      yogurt}           => {other vegetables} 0.010371124 0.5862069 0.017691917 3.029608
## [54] {other vegetables,=> {root vegetables} 0.010371124 0.3591549 0.028876462 3.295045
##      pip fruit}         => {sausage}        0.005998983 0.3072917 0.019522115 3.270794
## [55] {other vegetables,=> {tropical fruit} 0.008134215 0.3149606 0.025826131 3.001587
##      tropical fruit}   => {other vegetables} 0.012302999 0.5845411 0.021047280 3.020999
## [56] {citrus fruit,    => {root vegetables} 0.012302999 0.3427762 0.035892222 3.144780
##      root vegetables}  => {tropical fruit} 0.005083884 0.4854369 0.010472801 3.479790
## [57] {root vegetables,=> {yogurt}          0.005083884 0.2283105 0.022267412 3.158135
##      tropical fruit}   => {fruit/vegetable juice} 0.005083884 0.005185562 0.3541667 0.014641586 3.249281
## [58] {other vegetables,=> {root vegetables} 0.005185562 0.2236842 0.023182511 3.120474
##      tropical fruit}   => {whipped/sour cream} 0.005185562 0.2511416 0.022267412 3.503514
## [59] {citrus fruit,    => {whipped/sour cream} 0.005592272 0.6136364 0.008947636 3.171368
##      root vegetables}  => {other vegetables} 0.005490595 0.3398693 0.015556685 3.238967
## [60] {citrus fruit,    => {other vegetables} 0.009456024 0.3618677 0.026131164 3.448613
##      other vegetables}=> {root vegetables} 0.009456024 0.2634561 0.035892222 3.482649
## [61] {rolls/buns,      => {sausage}        0.005998983 0.3072917 0.019522115 3.270794
##      shopping bags}    => {tropical fruit} 0.008134215 0.3149606 0.025826131 3.001587
## [62] {root vegetables,=> {other vegetables} 0.012302999 0.5845411 0.021047280 3.020999
##      yogurt}           => {root vegetables} 0.012302999 0.3427762 0.035892222 3.144780
## [63] {root vegetables,=> {tropical fruit} 0.005083884 0.4854369 0.010472801 3.479790
##      tropical fruit}   => {other vegetables} 0.005083884 0.2283105 0.022267412 3.158135
## [64] {other vegetables,=> {root vegetables} 0.005185562 0.2236842 0.023182511 3.120474
##      tropical fruit}   => {whipped/sour cream} 0.005185562 0.2511416 0.022267412 3.503514
## [65] {fruit/vegetable juice,=> {yogurt}          0.005083884 0.6136364 0.008947636 3.171368
##      other vegetables,  => {root vegetables} 0.005185562 0.3541667 0.014641586 3.249281
##      whole milk}        => {tropical fruit} 0.008134215 0.3149606 0.025826131 3.001587
## [66] {other vegetables,=> {whole milk}       0.005185562 0.2634561 0.035892222 3.482649
##      whole milk,        => {other vegetables} 0.005185562 0.2283105 0.022267412 3.158135
##      yogurt}            => {whipped/sour cream} 0.005185562 0.2511416 0.022267412 3.503514
## [67] {other vegetables,=> {whole milk}       0.005083884 0.6136364 0.008947636 3.171368
##      whipped/sour cream,=> {root vegetables} 0.005185562 0.3541667 0.014641586 3.249281
##      whole milk}        => {tropical fruit} 0.008134215 0.3149606 0.025826131 3.001587
## [68] {other vegetables,=> {whole milk}       0.005185562 0.2634561 0.035892222 3.482649
##      root vegetables,   => {other vegetables} 0.005185562 0.2283105 0.022267412 3.158135
##      whole milk}        => {whipped/sour cream} 0.005185562 0.2511416 0.022267412 3.503514
## [69] {other vegetables,=> {whole milk}       0.005083884 0.6136364 0.008947636 3.171368
##      whole milk,        => {yogurt}          0.005083884 0.3541667 0.014641586 3.249281
##      yogurt}             => {whipped/sour cream} 0.005185562 0.2634561 0.035892222 3.482649
## [70] {pip fruit,        => {yogurt}          0.005083884 0.6136364 0.008947636 3.171368
##      root vegetables,   => {whole milk}       0.005083884 0.3541667 0.014641586 3.249281
##      whole milk}         => {other vegetables} 0.005185562 0.2283105 0.022267412 3.158135
## [71] {other vegetables,=> {whole milk}       0.005083884 0.6136364 0.008947636 3.171368
##      whole milk}         => {yogurt}          0.005083884 0.3541667 0.014641586 3.249281

```

```

##      pip fruit,
##      whole milk}      => {root vegetables}      0.005490595  0.4060150  0.013523132  3.724961
## [72] {other vegetables,
##      root vegetables,
##      whole milk}      => {pip fruit}          0.005490595  0.2368421  0.023182511  3.130836
## [73] {other vegetables,
##      whole milk,
##      yogurt}          => {pip fruit}          0.005083884  0.2283105  0.022267412  3.018056
## [74] {citrus fruit,
##      root vegetables,
##      whole milk}      => {other vegetables}    0.005795628  0.6333333  0.009150991  3.273165
## [75] {citrus fruit,
##      other vegetables,
##      whole milk}      => {root vegetables}    0.005795628  0.4453125  0.013014743  4.085493
## [76] {other vegetables,
##      root vegetables,
##      whole milk}      => {citrus fruit}        0.005795628  0.2500000  0.023182511  3.020577
## [77] {root vegetables,
##      tropical fruit,
##      whole milk}      => {yogurt}            0.005693950  0.4745763  0.011997966  3.401937
## [78] {tropical fruit,
##      whole milk,
##      yogurt}          => {root vegetables}    0.005693950  0.3758389  0.015149975  3.448112
## [79] {root vegetables,
##      whole milk,
##      yogurt}          => {tropical fruit}       0.005693950  0.3916084  0.014539908  3.732043
## [80] {root vegetables,
##      tropical fruit,
##      whole milk}      => {other vegetables}   0.007015760  0.5847458  0.011997966  3.022057
## [81] {other vegetables,
##      tropical fruit,
##      whole milk}      => {root vegetables}    0.007015760  0.4107143  0.017081851  3.768074
## [82] {other vegetables,
##      tropical fruit,
##      whole milk}      => {yogurt}            0.007625826  0.4464286  0.017081851  3.200164
## [83] {other vegetables,
##      whole milk,
##      yogurt}          => {tropical fruit}       0.007625826  0.3424658  0.022267412  3.263712
## [84] {other vegetables,
##      whole milk,
##      yogurt}          => {root vegetables}    0.007829181  0.3515982  0.022267412  3.225716
## [85] {other vegetables,
##      rolls/buns,
##      whole milk}      => {root vegetables}    0.006202339  0.3465909  0.017895272  3.179778
lifts <- sort (groceries_rule, by="lift", decreasing=TRUE)
inspect((lifts))[1:15,]

##      lhs                      rhs                      support  confidence  coverage
## [1]  {ham}                    => {white bread}        0.005083884  0.1953125  0.026029487  4
## [2]  {white bread}           => {ham}                  0.005083884  0.1207729  0.042094560  4
## [3]  {citrus fruit,
##      other vegetables,
##      whole milk}          => {root vegetables}  0.005795628  0.4453125  0.013014743  4
## [4]  {butter,}

```

##	{other vegetables}	=> {whipped/sour cream}	0.005795628	0.2893401	0.020030503	4
## [5]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429	3
## [6]	{other vegetables, root vegetables}	=> {onions}	0.005693950	0.1201717	0.047381800	3
## [7]	{citrus fruit, pip fruit}	=> {tropical fruit}	0.005592272	0.4044118	0.013828165	3
## [8]	{berries}	=> {whipped/sour cream}	0.009049314	0.2721713	0.033248602	3
## [9]	{whipped/sour cream}	=> {berries}	0.009049314	0.1262411	0.071682766	3
## [10]	{other vegetables, tropical fruit, whole milk}	=> {root vegetables}	0.007015760	0.4107143	0.017081851	3
## [11]	{whipped/sour cream, whole milk}	=> {butter}	0.006710727	0.2082019	0.032231825	3
## [12]	{root vegetables, whole milk, yogurt}	=> {tropical fruit}	0.005693950	0.3916084	0.014539908	3
## [13]	{other vegetables, pip fruit, whole milk}	=> {root vegetables}	0.005490595	0.4060150	0.013523132	3
## [14]	{citrus fruit, tropical fruit}	=> {pip fruit}	0.005592272	0.2806122	0.019928826	3
## [15]	{curd, tropical fruit}	=> {yogurt}	0.005287239	0.5148515	0.010269446	3
## [16]	{beef, other vegetables}	=> {root vegetables}	0.007930859	0.4020619	0.019725470	3
## [17]	{onions, other vegetables}	=> {root vegetables}	0.005693950	0.4000000	0.014234875	3
## [18]	{other vegetables, whipped/sour cream}	=> {butter}	0.005795628	0.2007042	0.028876462	3
## [19]	{domestic eggs, whole milk}	=> {butter}	0.005998983	0.2000000	0.029994916	3
## [20]	{hygiene articles}	=> {napkins}	0.006100661	0.1851852	0.032943569	3
## [21]	{napkins}	=> {hygiene articles}	0.006100661	0.1165049	0.052364006	3
## [22]	{other vegetables, whole milk, yogurt}	=> {whipped/sour cream}	0.005592272	0.2511416	0.022267412	3
## [23]	{other vegetables, tropical fruit}	=> {pip fruit}	0.009456024	0.2634561	0.035892222	3
## [24]	{fruit/vegetable juice, other vegetables, whole milk}	=> {yogurt}	0.005083884	0.4854369	0.010472801	3
## [25]	{beef, whole milk}	=> {root vegetables}	0.008032537	0.3779904	0.021250635	3
## [26]	{root vegetables, yogurt}	=> {whipped/sour cream}	0.006405694	0.2480315	0.025826131	3
## [27]	{other vegetables, pip fruit}	=> {tropical fruit}	0.009456024	0.3618677	0.026131164	3
## [28]	{tropical fruit, whole milk, yogurt}	=> {root vegetables}	0.005693950	0.3758389	0.015149975	3
## [29]	{whipped/sour cream, whole milk}	=> {curd}	0.005897306	0.1829653	0.032231825	3
## [30]	{butter, whole milk}	=> {domestic eggs}	0.005998983	0.2177122	0.027554652	3

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## [31] {root vegetables,
##      tropical fruit,
##      whole milk}          => {yogurt}           0.005693950 0.4745763 0.011997966 3
## [32] {butter,
##      whole milk}          => {whipped/sour cream} 0.006710727 0.2435424 0.027554652 3
## [33] {pip fruit,
##      yogurt}              => {tropical fruit} 0.006405694 0.3559322 0.017996950 3
## [34] {tropical fruit,
##      yogurt}              => {curd}            0.005287239 0.1805556 0.029283172 3
## [35] {margarine,
##      whole milk}          => {domestic eggs} 0.005185562 0.2142857 0.024199288 3
## [36] {whole milk,
##      yogurt}              => {curd}            0.010066090 0.1796733 0.056024403 3
## [37] {root vegetables,
##      tropical fruit}       => {pip fruit}        0.005287239 0.2512077 0.021047280 3
## [38] {pip fruit,
##      tropical fruit}       => {citrus fruit}    0.005592272 0.2736318 0.020437214 3
## [39] {citrus fruit,
##      other vegetables}     => {root vegetables} 0.010371124 0.3591549 0.028876462 3
## [40] {citrus fruit,
##      root vegetables,
##      whole milk}          => {other vegetables} 0.005795628 0.6333333 0.009150991 3
## [41] {rolls/buns,
##      shopping bags}        => {sausage}         0.005998983 0.3072917 0.019522115 3
## [42] {root vegetables,
##      tropical fruit}       => {citrus fruit}    0.005693950 0.2705314 0.021047280 3
## [43] {other vegetables,
##      yogurt}              => {whipped/sour cream} 0.010167768 0.2341920 0.043416370 3
## [44] {other vegetables,
##      whole milk,
##      yogurt}              => {tropical fruit} 0.007625826 0.3424658 0.022267412 3
## [45] {chicken}              => {frozen vegetables} 0.006710727 0.1563981 0.042907982 3
## [46] {frozen vegetables}     => {chicken}          0.006710727 0.1395349 0.048093543 3
## [47] {other vegetables,
##      whipped/sour cream,
##      whole milk}          => {root vegetables} 0.005185562 0.3541667 0.014641586 3
## [48] {pip fruit,
##      root vegetables}      => {tropical fruit} 0.005287239 0.3398693 0.015556685 3
## [49] {other vegetables,
##      whole milk,
##      yogurt}              => {root vegetables} 0.007829181 0.3515982 0.022267412 3
## [50] {tropical fruit,
##      whipped/sour cream}   => {yogurt}           0.006202339 0.4485294 0.013828165 3
## [51] {other vegetables,
##      tropical fruit,
##      whole milk}          => {yogurt}           0.007625826 0.4464286 0.017081851 3
## [52] {other vegetables,
##      root vegetables}      => {beef}             0.007930859 0.1673820 0.047381800 3
## [53] {domestic eggs,
##      other vegetables}     => {whipped/sour cream} 0.005083884 0.2283105 0.022267412 3
## [54] {other vegetables,
##      rolls/buns,
##      whole milk}          => {root vegetables} 0.006202339 0.3465909 0.017895272 3
## [55] {pip fruit,

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##      root vegetables,
##      whole milk}          => {other vegetables}    0.005490595  0.6136364  0.008947636 3
## [56]  {other vegetables,
##      whole milk,
##      yogurt}             => {fruit/vegetable juice} 0.005083884  0.2283105  0.022267412 3
## [57]  {curd,
##      whole milk}          => {whipped/sour cream} 0.005897306  0.2256809  0.026131164 3
## [58]  {frozen vegetables,
##      other vegetables}    => {root vegetables}     0.006100661  0.3428571  0.017793594 3
## [59]  {other vegetables,
##      tropical fruit}      => {root vegetables}     0.012302999  0.3427762  0.035892222 3
## [60]  {other vegetables,
##      root vegetables,
##      whole milk}          => {pip fruit}        0.005490595  0.2368421  0.023182511 3
## [61]  {root vegetables,
##      whole milk}          => {beef}              0.008032537  0.1642412  0.048906965 3
## [62]  {chicken,
##      whole milk}          => {root vegetables}    0.005998983  0.3410405  0.017590239 3
## [63]  {pip fruit,
##      whipped/sour cream}  => {other vegetables}    0.005592272  0.6043956  0.009252669 3
## [64]  {other vegetables,
##      root vegetables,
##      whole milk}          => {whipped/sour cream} 0.005185562  0.2236842  0.023182511 3
## [65]  {onions,
##      root vegetables}     => {other vegetables}    0.005693950  0.6021505  0.009456024 3
## [66]  {other vegetables,
##      yogurt}              => {cream cheese}      0.005287239  0.1217799  0.043416370 3
## [67]  {citrus fruit,
##      root vegetables}     => {tropical fruit}    0.005693950  0.3218391  0.017691917 3
## [68]  {sliced cheese}      => {sausage}          0.007015760  0.2863071  0.024504321 3
## [69]  {other vegetables,
##      tropical fruit}      => {citrus fruit}       0.009049314  0.2521246  0.035892222 3
## [70]  {other vegetables,
##      tropical fruit}      => {whipped/sour cream} 0.007829181  0.2181303  0.035892222 3
## [71]  {root vegetables}    => {beef}              0.017386884  0.1595149  0.108998475 3
## [72]  {beef}                => {root vegetables}    0.017386884  0.3313953  0.052465684 3
## [73]  {waffles}            => {chocolate}         0.005795628  0.1507937  0.038434164 3
## [74]  {chocolate}          => {waffles}           0.005795628  0.1168033  0.049618709 3
## [75]  {root vegetables,
##      whole milk}          => {butter}            0.008235892  0.1683992  0.048906965 3
## [76]  {citrus fruit,
##      root vegetables}     => {other vegetables}   0.010371124  0.5862069  0.017691917 3
## [77]  {butter,
##      other vegetables}    => {root vegetables}    0.006609049  0.3299492  0.020030503 3
## [78]  {root vegetables,
##      tropical fruit,
##      whole milk}          => {other vegetables}   0.007015760  0.5847458  0.011997966 3
## [79]  {root vegetables,
##      tropical fruit}      => {other vegetables}   0.012302999  0.5845411  0.021047280 3
## [80]  {other vegetables,
##      root vegetables,
##      whole milk}          => {citrus fruit}       0.005795628  0.2500000  0.023182511 3
## [81]  {other vegetables,
##      whole milk,

```

##	yogurt}	=> {pip fruit}	0.005083884	0.2283105	0.022267412	3
## [82]	{domestic eggs,	=> {root vegetables}	0.007320793	0.3287671	0.022267412	3
##	other vegetables}					
## [83]	{whole milk,	=> {butter}	0.009354347	0.1669691	0.056024403	3
##	yogurt}					
## [84]	{citrus fruit,	=> {butter}	0.005083884	0.1666667	0.030503305	3
##	whole milk}					
## [85]	{root vegetables,	=> {tropical fruit}	0.008134215	0.3149606	0.025826131	3
##	yogurt}					
## [86]	{fruit/vegetable juice,	=> {tropical fruit}	0.006609049	0.3140097	0.021047280	2
##	other vegetables}					
## [87]	{citrus fruit,	=> {tropical fruit}	0.009049314	0.3133803	0.028876462	2
##	other vegetables}					
## [88]	{other vegetables,	=> {whipped/sour cream}	0.005592272	0.2140078	0.026131164	2
##	pip fruit}					
## [89]	{whole milk,	=> {cream cheese}	0.006609049	0.1179673	0.056024403	2
##	yogurt}					
## [90]	{other vegetables,	=> {root vegetables}	0.007015760	0.3239437	0.021657346	2
##	pork}					
## [91]	{tropical fruit,	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172	2
##	yogurt}					
## [92]	{domestic eggs,	=> {margarine}	0.005185562	0.1728814	0.029994916	2
##	whole milk}					
## [93]	{bottled water,	=> {tropical fruit}	0.007117438	0.3097345	0.022979156	2
##	yogurt}					
## [94]	{butter,	=> {other vegetables}	0.005795628	0.5700000	0.010167768	2
##	whipped/sour cream}					
## [95]	{citrus fruit,	=> {domestic eggs}	0.005693950	0.1866667	0.030503305	2
##	whole milk}					
## [96]	{curd,	=> {tropical fruit}	0.005287239	0.3076923	0.017183528	2
##	other vegetables}					
## [97]	{curd,	=> {root vegetables}	0.005490595	0.3195266	0.017183528	2
##	other vegetables}					
## [98]	{tropical fruit,	=> {other vegetables}	0.007829181	0.5661765	0.013828165	2
##	whipped/sour cream}					
## [99]	{chicken,	=> {root vegetables}	0.005693950	0.3181818	0.017895272	2
##	other vegetables}					
## [100]	{curd,	=> {tropical fruit}	0.005287239	0.3058824	0.017285206	2
##	yogurt}					
## [101]	{tropical fruit,	=> {pip fruit}	0.006405694	0.2187500	0.029283172	2
##	yogurt}					
## [102]	{tropical fruit,	=> {curd}	0.006507372	0.1538462	0.042297916	2
##	whole milk}					
## [103]	{other vegetables,	=> {tropical fruit}	0.007015760	0.3026316	0.023182511	2
##	root vegetables,					
##	whole milk}	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305	2
## [104]	{citrus fruit,	=> {root vegetables}	0.006609049	0.3140097	0.021047280	2
##	whole milk}					
## [105]	{fruit/vegetable juice,	=> {yogurt}	0.006609049	0.4012346	0.016471784	2
##	other vegetables}					
## [106]	{cream cheese,	=> {chicken}	0.005998983	0.1226611	0.048906965	2
##	whole milk}					

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## [108] {other vegetables,
##       pip fruit}          => {root vegetables}      0.008134215  0.3112840  0.026131164 2
## [109] {whipped/sour cream,
##       yogurt}            => {tropical fruit}     0.006202339  0.2990196  0.020742247 2
## [110] {newspapers,
##       other vegetables}   => {root vegetables}      0.005998983  0.3105263  0.019318760 2
## [111] {long life bakery product} => {chocolate}        0.005287239  0.1413043  0.037417387 2
## [112] {chocolate}         => {long life bakery product} 0.005287239  0.1065574  0.049618709 2
## [113] {butter,
##       tropical fruit}    => {other vegetables}      0.005490595  0.5510204  0.009964413 2
## [114] {fruit/vegetable juice,
##       root vegetables}   => {other vegetables}      0.006609049  0.5508475  0.011997966 2
## [115] {other vegetables,
##       whole milk}         => {root vegetables}      0.023182511  0.3097826  0.074834774 2
## [116] {root vegetables,
##       whipped/sour cream,
##       whole milk}         => {other vegetables}      0.005185562  0.5483871  0.009456024 2
## [117] {whipped/sour cream,
##       yogurt}             => {root vegetables}      0.006405694  0.3088235  0.020742247 2
## [118] {bottled water,
##       whole milk}         => {butter}              0.005388917  0.1568047  0.034367056 2
## [119] {citrus fruit,
##       whole milk}         => {tropical fruit}     0.009049314  0.2966667  0.030503305 2
## [120] {onions,
##       whole milk}         => {other vegetables}      0.006609049  0.5462185  0.012099644 2
## [121] {pip fruit,
##       whole milk}         => {domestic eggs}       0.005388917  0.1790541  0.030096594 2
## [122] {pork,
##       whole milk}         => {root vegetables}      0.006812405  0.3073394  0.022165735 2
## [123] {fruit/vegetable juice,
##       other vegetables}   => {yogurt}              0.008235892  0.3913043  0.021047280 2
## [124] {other vegetables,
##       root vegetables}   => {chicken}              0.005693950  0.1201717  0.047381800 2
## [125] {onions}           => {root vegetables}      0.009456024  0.3049180  0.031011693 2
## [126] {whipped/sour cream,
##       whole milk}         => {domestic eggs}       0.005693950  0.1766562  0.032231825 2
## [127] {frozen vegetables,
##       whole milk}         => {root vegetables}      0.006202339  0.3034826  0.020437214 2
## [128] {root vegetables,
##       whole milk,
##       yogurt}             => {other vegetables}      0.007829181  0.5384615  0.014539908 2
## [129] {pip fruit,
##       whole milk}         => {whipped/sour cream} 0.005998983  0.1993243  0.030096594 2
## [130] {fruit/vegetable juice,
##       whole milk,
##       yogurt}             => {other vegetables}      0.005083884  0.5376344  0.009456024 2
## [131] {pastry,
##       root vegetables}   => {other vegetables}      0.005897306  0.5370370  0.010981190 2
## [132] {other vegetables,
##       whipped/sour cream} => {domestic eggs}       0.005083884  0.1760563  0.028876462 2
## [133] {citrus fruit,
##       yogurt}             => {tropical fruit}     0.006304016  0.2910798  0.021657346 2
## [134] {other vegetables,
##       whole milk}         => {butter}              0.011489578  0.1535326  0.074834774 2

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## [135] {root vegetables,
##        tropical fruit} => {yogurt} 0.008134215 0.3864734 0.021047280 2
## [136] {sugar} => {margarine} 0.005490595 0.1621622 0.033858668 2
## [137] {other vegetables,
##        tropical fruit} => {curd} 0.005287239 0.1473088 0.035892222 2
## [138] {curd, => {yogurt} 0.010066090 0.3852140 0.026131164 2
##        whole milk} => {yogurt} 0.005287239 0.3851852 0.013726487 2
## [139] {cream cheese, => {yogurt} 0.005490595 0.1529745 0.035892222 2
##        other vegetables} => {butter} 0.007117438 0.3846154 0.018505338 2
## [140] {other vegetables, => {yogurt} 0.008540925 0.1746362 0.048906965 2
##        tropical fruit} => {root vegetables} 0.009150991 0.3000000 0.030503305 2
## [141] {bottled water, => {whipped/sour cream} 0.005693950 0.1971831 0.028876462 2
##        tropical fruit} => {other vegetables} 0.005897306 0.5321101 0.011082867 2
## [142] {root vegetables, => {other vegetables} 0.005083884 0.5319149 0.009557702 2
##        whole milk} => {domestic eggs} 0.009659380 0.1743119 0.055414337 2
## [143] {citrus fruit, => {butter} 0.009659380 0.1522436 0.063446873 2
##        whole milk} => {root vegetables} 0.005897306 0.2989691 0.019725470 2
## [144] {citrus fruit, => {root vegetables} 0.008235892 0.2988930 0.027554652 2
##        other vegetables} => {curd} 0.010472801 0.1460993 0.071682766 2
## [145] {margarine, => {whipped/sour cream} 0.010472801 0.1965649 0.053279105 2
##        root vegetables} => {other vegetables} 0.005693950 0.7000000 0.008134215 2
## [146] {pip fruit, => {whole milk} 0.005592272 0.3819444 0.014641586 2
##        whole milk, => {yogurt} 0.014641586 0.1956522 0.074834774 2
## [147] yogurt} => {whipped/sour cream} 0.012913066 0.2974239 0.043416370 2
## [148] {butter} => {root vegetables} 0.008947636 0.2972973 0.030096594 2
## [149] {domestic eggs} => {root vegetables} 0.005897306 0.2256809 0.026131164 2
## [150] => {curd} 0.006100661 0.5263158 0.011591256 2
## [151] {margarine, => {whipped/sour cream} 0.008540925 0.2957746 0.028876462 2
##        other vegetables} => {other vegetables} 0.010879512 0.1941924 0.056024403 2
## [152] {butter, => {whipped/sour cream} 0.005083884 0.2994012 0.016980173 2
## [153] => {root vegetables, 0.005693950 0.7000000 0.008134215 2
##        tropical fruit, => {whole milk} 0.005592272 0.3819444 0.014641586 2
## [154] yogurt} => {yogurt} 0.014641586 0.1956522 0.074834774 2
## [155] {other vegetables, => {root vegetables} 0.008947636 0.2974239 0.043416370 2
##        whipped/sour cream} => {whole milk} 0.005897306 0.2256809 0.026131164 2
## [156] => {whole milk} 0.006100661 0.5263158 0.011591256 2
## [157] => {root vegetables} 0.008540925 0.2957746 0.028876462 2
## [158] {other vegetables, => {citrus fruit} 0.005897306 0.2256809 0.026131164 2
##        pip fruit} => {other vegetables} 0.010879512 0.1941924 0.056024403 2
## [159] {frozen vegetables, => {root vegetables} 0.006100661 0.5263158 0.011591256 2
##        root vegetables} => {whipped/sour cream} 0.008540925 0.2957746 0.028876462 2
## [160] {other vegetables, => {root vegetables} 0.005693950 0.7000000 0.008134215 2
##        whipped/sour cream} => {whole milk, => {whipped/sour cream} 0.010879512 0.1941924 0.056024403 2
## [161] yogurt} => {bottled beer, 0.005083884 0.2994012 0.016980173 2
## [162] soda}

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## [163]	{root vegetables, ## yogurt}	=> {pip fruit}	0.005287239	0.2047244	0.025826131	2
## [164]	{chicken, ## root vegetables}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
## [165]	{citrus fruit, ## whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
## [166]	{pip fruit, ## root vegetables}	=> {other vegetables}	0.008134215	0.5228758	0.015556685	2
## [167]	{bottled beer, ## whole milk}	=> {bottled water}	0.006100661	0.2985075	0.020437214	2
## [168]	{other vegetables, ## yogurt}	=> {tropical fruit}	0.012302999	0.2833724	0.043416370	2
## [169]	{citrus fruit, ## other vegetables}	=> {pip fruit}	0.005897306	0.2042254	0.028876462	2
## [170]	{newspapers, ## root vegetables}	=> {other vegetables}	0.005998983	0.5221239	0.011489578	2
## [171]	{root vegetables, ## whole milk}	=> {whipped/sour cream}	0.009456024	0.1933472	0.048906965	2
## [172]	{pip fruit, ## yogurt}	=> {root vegetables}	0.005287239	0.2937853	0.017996950	2
## [173]	{other vegetables, ## pip fruit, ## whole milk}	=> {yogurt}	0.005083884	0.3759398	0.013523132	2
## [174]	{whipped/sour cream, ## whole milk}	=> {root vegetables}	0.009456024	0.2933754	0.032231825	2
## [175]	{root vegetables, ## whipped/sour cream}	=> {yogurt}	0.006405694	0.3750000	0.017081851	2
## [176]	{other vegetables, ## whole milk}	=> {frozen vegetables}	0.009659380	0.1290761	0.074834774	2
## [177]	{rolls/buns, ## soda}	=> {sausage}	0.009659380	0.2519894	0.038332486	2
## [178]	{other vegetables, ## root vegetables}	=> {frozen vegetables}	0.006100661	0.1287554	0.047381800	2
## [179]	{pip fruit, ## whole milk}	=> {tropical fruit}	0.008439248	0.2804054	0.030096594	2
## [180]	{root vegetables, ## shopping bags}	=> {other vegetables}	0.006609049	0.5158730	0.012811388	2
## [181]	{other vegetables, ## yogurt}	=> {butter}	0.006405694	0.1475410	0.043416370	2
## [182]	{pork, ## root vegetables}	=> {other vegetables}	0.007015760	0.5149254	0.013624809	2
## [183]	{curd, ## tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446	2
## [184]	{whipped/sour cream, ## whole milk, ## yogurt}	=> {other vegetables}	0.005592272	0.5140187	0.010879512	2
## [185]	{domestic eggs, ## whole milk}	=> {whipped/sour cream}	0.005693950	0.1898305	0.029994916	2
## [186]	{tropical fruit, ## whole milk}	=> {butter}	0.006202339	0.1466346	0.042297916	2
## [187]	{butter, ## root vegetables}	=> {other vegetables}	0.006609049	0.5118110	0.012913066	2
## [188]	{other vegetables, ## root vegetables}	=> {citrus fruit}	0.010371124	0.2188841	0.047381800	2

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## [189] {other vegetables,
##       pip fruit,
##       root vegetables}      => {whole milk}           0.005490595 0.6750000 0.008134215 2
## [190] {domestic eggs,
##       root vegetables}      => {other vegetables} 0.007320793 0.5106383 0.014336553 2
## [191] {tropical fruit,
##       whole milk}          => {pip fruit}           0.008439248 0.1995192 0.042297916 2
## [192] {other vegetables,
##       yogurt}              => {curd}                0.006100661 0.1405152 0.043416370 2
## [193] {root vegetables,
##       whole milk}          => {frozen vegetables} 0.006202339 0.1268191 0.048906965 2
## [194] {domestic eggs,
##       whipped/sour cream}   => {other vegetables} 0.005083884 0.5102041 0.009964413 2
## [195] {other vegetables,
##       whole milk}          => {chicken}              0.008439248 0.1127717 0.074834774 2
## [196] {other vegetables,
##       rolls/buns}          => {root vegetables} 0.012201322 0.2863962 0.042602949 2
## [197] {other vegetables,
##       yogurt}              => {fruit/vegetable juice} 0.008235892 0.1896956 0.043416370 2
## [198] {dessert}             => {curd}                0.005185562 0.1397260 0.037112354 2
## [199] {citrus fruit,
##       tropical fruit}       => {root vegetables} 0.005693950 0.2857143 0.019928826 2
## [200] {tropical fruit,
##       whole milk}          => {whipped/sour cream} 0.007930859 0.1875000 0.042297916 2
## [201] {other vegetables,
##       shopping bags}        => {root vegetables} 0.006609049 0.2850877 0.023182511 2
## [202] {domestic eggs,
##       whole milk}          => {root vegetables} 0.008540925 0.2847458 0.029994916 2
## [203] {butter,
##       other vegetables}     => {tropical fruit} 0.005490595 0.2741117 0.020030503 2
## [204] {curd,
##       root vegetables}      => {other vegetables} 0.005490595 0.5046729 0.010879512 2
## [205] {tropical fruit,
##       whole milk}          => {root vegetables} 0.011997966 0.2836538 0.042297916 2
## [206] {tropical fruit,
##       whole milk,
##       yogurt}              => {other vegetables} 0.007625826 0.5033557 0.015149975 2
## [207] {tropical fruit,
##       yogurt}              => {citrus fruit} 0.006304016 0.2152778 0.029283172 2
## [208] {grapes}              => {tropical fruit} 0.006100661 0.2727273 0.022369090 2
## [209] {rolls/buns,
##       root vegetables}      => {other vegetables} 0.012201322 0.5020921 0.024300966 2
## [210] {bottled water,
##       other vegetables}     => {root vegetables} 0.007015760 0.2827869 0.024809354 2
## [211] {other vegetables,
##       rolls/buns}           => {beef}                0.005795628 0.1360382 0.042602949 2
## [212] {other vegetables,
##       whole milk}          => {domestic eggs} 0.012302999 0.1644022 0.074834774 2
## [213] {tropical fruit,
##       whole milk}          => {citrus fruit} 0.009049314 0.2139423 0.042297916 2
## [214] {root vegetables,
##       whipped/sour cream}   => {other vegetables} 0.008540925 0.5000000 0.017081851 2
## [215] {root vegetables,
##       yogurt}              => {other vegetables} 0.012913066 0.5000000 0.025826131 2

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## [216] {other vegetables,
##        whipped/sour cream} => {tropical fruit} 0.007829181 0.2711268 0.028876462 2
## [217] {butter,
##        whipped/sour cream} => {whole milk} 0.006710727 0.6600000 0.010167768 2
## [218] {whole milk,
##        yogurt} => {tropical fruit} 0.015149975 0.2704174 0.056024403 2
## [219] {tropical fruit,
##        whole milk} => {domestic eggs} 0.006914082 0.1634615 0.042297916 2
## [220] {tropical fruit} => {pip fruit} 0.020437214 0.1947674 0.104931368 2
## [221] {pip fruit} => {tropical fruit} 0.020437214 0.2701613 0.075648195 2
## [222] {soda,
##        yogurt} => {fruit/vegetable juice} 0.005083884 0.1858736 0.027351296 2
## [223] {other vegetables,
##        root vegetables} => {pork} 0.007015760 0.1480687 0.047381800 2
## [224] {tropical fruit,
##        whole milk} => {yogurt} 0.015149975 0.3581731 0.042297916 2
## [225] {pork,
##        rolls/buns} => {other vegetables} 0.005592272 0.4954955 0.011286223 2
## [226] {other vegetables,
##        whipped/sour cream} => {pip fruit} 0.005592272 0.1936620 0.028876462 2
## [227] {butter} => {whipped/sour cream} 0.010167768 0.1834862 0.055414337 2
## [228] {whipped/sour cream} => {butter} 0.010167768 0.1418440 0.071682766 2
## [229] {soda,
##        whole milk} => {chocolate} 0.005083884 0.1269036 0.040061007 2
## [230] {fruit/vegetable juice,
##        soda} => {bottled water} 0.005185562 0.2817680 0.018403660 2
## [231] {tropical fruit,
##        yogurt} => {root vegetables} 0.008134215 0.2777778 0.029283172 2
## [232] {rolls/buns,
##        tropical fruit} => {yogurt} 0.008744281 0.3553719 0.024605999 2
## [233] {other vegetables,
##        tropical fruit} => {fruit/vegetable juice} 0.006609049 0.1841360 0.035892222 2
## [234] {curd,
##        other vegetables} => {yogurt} 0.006100661 0.3550296 0.017183528 2
## [235] {fruit/vegetable juice,
##        whole milk} => {yogurt} 0.009456024 0.3549618 0.026639553 2
## [236] {pip fruit,
##        whipped/sour cream} => {whole milk} 0.005998983 0.6483516 0.009252669 2
## [237] {whipped/sour cream,
##        yogurt} => {other vegetables} 0.010167768 0.4901961 0.020742247 2
## [238] {other vegetables,
##        yogurt} => {frozen vegetables} 0.005287239 0.1217799 0.043416370 2
## [239] {other vegetables,
##        whipped/sour cream} => {yogurt} 0.010167768 0.3521127 0.028876462 2
## [240] {rolls/buns,
##        root vegetables,
##        whole milk} => {other vegetables} 0.006202339 0.4880000 0.012709710 2
## [241] {beef} => {pork} 0.007625826 0.1453488 0.052465684 2
## [242] {pork} => {beef} 0.007625826 0.1322751 0.057651246 2
## [243] {soft cheese} => {yogurt} 0.005998983 0.3511905 0.017081851 2
## [244] {other vegetables,
##        root vegetables} => {butter} 0.006609049 0.1394850 0.047381800 2
## [245] {other vegetables,
##        root vegetables} => {whipped/sour cream} 0.008540925 0.1802575 0.047381800 2

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## [246] {butter,
##        yogurt}          => {whole milk}           0.009354347 0.6388889 0.014641586 2
## [247] {butter,
##        root vegetables} => {whole milk}           0.008235892 0.6377953 0.012913066 2
## [248] {fruit/vegetable juice,
##        tropical fruit}   => {other vegetables}  0.006609049 0.4814815 0.013726487 2
## [249] {root vegetables,
##        sausage}          => {yogurt}              0.005185562 0.3469388 0.014946619 2
## [250] {curd,
##        tropical fruit}   => {whole milk}           0.006507372 0.6336634 0.010269446 2
## [251] {chicken,
##        whole milk}         => {other vegetables}  0.008439248 0.4797688 0.017590239 2
## [252] {other vegetables,
##        yogurt}            => {pip fruit}             0.008134215 0.1873536 0.043416370 2
## [253] {citrus fruit,
##        rolls/buns}         => {yogurt}              0.005795628 0.3454545 0.016776817 2
## [254] {bottled water,
##        other vegetables}  => {citrus fruit}          0.005083884 0.2049180 0.024809354 2
## [255] {bottled water,
##        soda}               => {fruit/vegetable juice} 0.005185562 0.1789474 0.028978139 2
## [256] {other vegetables,
##        root vegetables}   => {tropical fruit}        0.012302999 0.2596567 0.047381800 2
## [257] {other vegetables,
##        shopping bags}     => {sausage}              0.005388917 0.2324561 0.023182511 2
## [258] {other vegetables,
##        whole milk}         => {curd}                 0.009862735 0.1317935 0.074834774 2
## [259] {sausage,
##        whole milk}         => {pip fruit}             0.005592272 0.1870748 0.029893238 2
## [260] {shopping bags,
##        soda}               => {sausage}              0.005693950 0.2314050 0.024605999 2
## [261] {whipped/sour cream,
##        whole milk}         => {pip fruit}             0.005998983 0.1861199 0.032231825 2
## [262] {other vegetables,
##        tropical fruit}    => {yogurt}              0.012302999 0.3427762 0.035892222 2
## [263] {soda,
##        yogurt}             => {bottled water}        0.007422471 0.2713755 0.027351296 2
## [264] {herbs}              => {other vegetables}  0.007727504 0.4750000 0.016268429 2
## [265] {root vegetables,
##        whole milk}         => {other vegetables}  0.023182511 0.4740125 0.048906965 2
## [266] {other vegetables,
##        soda}               => {domestic eggs}        0.005083884 0.1552795 0.032740214 2
## [267] {other vegetables,
##        pip fruit,
##        yogurt}             => {whole milk}           0.005083884 0.6250000 0.008134215 2
## [268] {frozen vegetables,
##        whole milk}         => {other vegetables}  0.009659380 0.4726368 0.020437214 2
## [269] {domestic eggs,
##        pip fruit}          => {whole milk}           0.005388917 0.6235294 0.008642603 2
## [270] {white bread}        => {fruit/vegetable juice} 0.007422471 0.1763285 0.042094560 2
## [271] {fruit/vegetable juice}
## [272] {butter}              => {white bread}          0.007422471 0.1026723 0.072292832 2
## [273] {chicken}             => {chicken}              0.005795628 0.1045872 0.055414337 2
## [274] {pip fruit,
##        root vegetables}   => {butter}                0.005795628 0.1350711 0.042907982 2
## [275] {yogurt}              => {yogurt}              0.005287239 0.3398693 0.015556685 2

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## [275] {butter,
##        tropical fruit}      => {whole milk}           0.006202339 0.6224490 0.009964413 2
## [276] {other vegetables,
##        root vegetables}    => {domestic eggs}       0.007320793 0.1545064 0.047381800 2
## [277] {domestic eggs,
##        margarine}          => {whole milk}           0.005185562 0.6219512 0.008337570 2
## [278] {butter,
##        whole milk}          => {yogurt}              0.009354347 0.3394834 0.027554652 2
## [279] {butter,
##        domestic eggs}       => {whole milk}           0.005998983 0.6210526 0.009659380 2
## [280] {other vegetables,
##        tropical fruit,
##        yogurt}              => {whole milk}           0.007625826 0.6198347 0.012302999 2
## [281] {rolls/buns,
##        yogurt}              => {tropical fruit}     0.008744281 0.2544379 0.034367056 2
## [282] {sausage,
##        yogurt}              => {root vegetables}   0.005185562 0.2642487 0.019623793 2
## [283] {other vegetables,
##        root vegetables,
##        whole milk}           => {yogurt}              0.007829181 0.3377193 0.023182511 2
## [284] {whipped/sour cream,
##        whole milk}           => {yogurt}              0.010879512 0.3375394 0.032231825 2
## [285] {root vegetables,
##        whole milk}           => {pip fruit}          0.008947636 0.1829522 0.048906965 2
## [286] {root vegetables,
##        whole milk}           => {pork}                0.006812405 0.1392931 0.048906965 2
## [287] {fruit/vegetable juice,
##        other vegetables,
##        yogurt}               => {whole milk}           0.005083884 0.6172840 0.008235892 2
## [288] {citrus fruit,
##        whole milk}           => {yogurt}              0.010269446 0.3366667 0.030503305 2
## [289] {other vegetables,
##        rolls/buns}           => {butter}              0.005693950 0.1336516 0.042602949 2
## [290] {cream cheese}       => {curd}                0.005083884 0.1282051 0.039654296 2
## [291] {frankfurter,
##        whole milk}           => {tropical fruit}     0.005185562 0.2524752 0.020538892 2
## [292] {butter milk}        => {pip fruit}          0.005083884 0.1818182 0.027961362 2
## [293] {other vegetables,
##        rolls/buns,
##        whole milk}           => {yogurt}              0.005998983 0.3352273 0.017895272 2
## [294] {other vegetables,
##        pastry}               => {root vegetables}   0.005897306 0.2612613 0.022572445 2
## [295] {pip fruit,
##        tropical fruit}       => {other vegetables}   0.009456024 0.4626866 0.020437214 2
## [296] {rolls/buns,
##        whole milk}           => {margarine}          0.007930859 0.1400359 0.056634469 2
## [297] {other vegetables,
##        whole milk}           => {pip fruit}          0.013523132 0.1807065 0.074834774 2
## [298] {bottled water,
##        other vegetables}    => {tropical fruit}     0.006202339 0.2500000 0.024809354 2
## [299] {other vegetables,
##        whipped/sour cream}   => {citrus fruit}        0.005693950 0.1971831 0.028876462 2
## [300] {whole milk,
##        yogurt}              => {root vegetables}   0.014539908 0.2595281 0.056024403 2

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## [301] {root vegetables,
##       whole milk}          => {curd}           0.006202339 0.1268191 0.048906965 2
## [302] {sausage,
##       soda}                => {shopping bags} 0.005693950 0.2343096 0.024300966 2
## [303] {domestic eggs,
##       tropical fruit}     => {whole milk}      0.006914082 0.6071429 0.011387900 2
## [304] {other vegetables,
##       root vegetables,
##       whipped/sour cream} => {whole milk}      0.005185562 0.6071429 0.008540925 2
## [305] {domestic eggs,
##       whole milk}          => {pip fruit}      0.005388917 0.1796610 0.029994916 2
## [306] {pip fruit,
##       tropical fruit}     => {root vegetables} 0.005287239 0.2587065 0.020437214 2
## [307] {curd,
##       whole milk}          => {tropical fruit} 0.006507372 0.2490272 0.026131164 2
## [308] {other vegetables,
##       root vegetables,
##       yogurt}              => {whole milk}      0.007829181 0.6062992 0.012913066 2
## [309] {sausage,
##       whole milk}          => {whipped/sour cream} 0.005083884 0.1700680 0.029893238 2
## [310] {onions}             => {other vegetables} 0.014234875 0.4590164 0.031011693 2
## [311] {sausage,
##       whole milk}          => {root vegetables} 0.007727504 0.2585034 0.029893238 2
## [312] {pork,
##       whole milk}          => {other vegetables} 0.010167768 0.4587156 0.022165735 2
## [313] {rolls/buns,
##       whipped/sour cream} => {other vegetables} 0.006710727 0.4583333 0.014641586 2
## [314] {whipped/sour cream,
##       whole milk}          => {citrus fruit}    0.006304016 0.1955836 0.032231825 2
## [315] {beef,
##       root vegetables}     => {other vegetables} 0.007930859 0.4561404 0.017386884 2
## [316] {bottled water,
##       butter}               => {whole milk}      0.005388917 0.6022727 0.008947636 2
## [317] {other vegetables,
##       whole milk}          => {pork}           0.010167768 0.1358696 0.074834774 2
## [318] {other vegetables,
##       whole milk}          => {beef}            0.009252669 0.1236413 0.074834774 2
## [319] {root vegetables,
##       sausage}              => {other vegetables} 0.006812405 0.4557823 0.014946619 2
## [320] {bottled water,
##       other vegetables}    => {yogurt}          0.008134215 0.3278689 0.024809354 2
## [321] {sliced cheese}      => {yogurt}          0.008032537 0.3278008 0.024504321 2
## [322] {whipped/sour cream,
##       whole milk}          => {other vegetables} 0.014641586 0.4542587 0.032231825 2
## [323] {whipped/sour cream}=> {chicken}         0.007219115 0.1007092 0.071682766 2
## [324] {chicken}             => {whipped/sour cream} 0.007219115 0.1682464 0.042907982 2
## [325] {other vegetables,
##       soda}                => {sausage}         0.007219115 0.2204969 0.032740214 2
## [326] {citrus fruit,
##       tropical fruit}     => {other vegetables} 0.009049314 0.4540816 0.019928826 2
## [327] {whipped/sour cream,
##       whole milk}          => {tropical fruit}  0.007930859 0.2460568 0.032231825 2
## [328] {chicken}             => {pork}            0.005795628 0.1350711 0.042907982 2
## [329] {pork}                => {chicken}        0.005795628 0.1005291 0.057651246 2

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## [330] {root vegetables,
##       whole milk}          => {tropical fruit}      0.011997966 0.2453222 0.048906965 2
## [331] {pip fruit,
##       yogurt}              => {other vegetables} 0.008134215 0.4519774 0.017996950 2
## [332] {whole milk,
##       yogurt}              => {fruit/vegetable juice} 0.009456024 0.1687840 0.056024403 2
## [333] {bottled water,
##       whole milk}           => {fruit/vegetable juice} 0.005795628 0.1686391 0.034367056 2
## [334] {domestic eggs,
##       root vegetables}     => {whole milk}         0.008540925 0.5957447 0.014336553 2
## [335] {oil,
##       whole milk}           => {other vegetables} 0.005083884 0.4504505 0.011286223 2
## [336] {chicken}            => {root vegetables} 0.010879512 0.2535545 0.042907982 2
## [337] {curd}                => {yogurt}             0.017285206 0.3244275 0.053279105 2
## [338] {yogurt}              => {curd}               0.017285206 0.1239067 0.139501779 2
## [339] {pip fruit,
##       whole milk}           => {other vegetables} 0.013523132 0.4493243 0.030096594 2
## [340] {other vegetables,
##       sausage}              => {root vegetables} 0.006812405 0.2528302 0.026944586 2
## [341] {bottled water,
##       root vegetables}     => {other vegetables} 0.007015760 0.4480519 0.015658363 2
## [342] {rolls/buns,
##       root vegetables}     => {tropical fruit}      0.005897306 0.2426778 0.024300966 2
## [343] {soda,
##       whole milk}           => {pastry}             0.008235892 0.2055838 0.040061007 2
## [344] {frozen vegetables}  => {pork}               0.006405694 0.1331924 0.048093543 2
## [345] {pork}                => {frozen vegetables} 0.006405694 0.1111111 0.057651246 2
## [346] {other vegetables,
##       soda}                 => {root vegetables} 0.008235892 0.2515528 0.032740214 2
## [347] {butter}              => {curd}               0.006812405 0.1229358 0.055414337 2
## [348] {curd}                => {butter}              0.006812405 0.1278626 0.053279105 2
## [349] {soda,
##       yogurt}              => {tropical fruit}      0.006609049 0.2416357 0.027351296 2
## [350] {sausage,
##       whole milk}           => {tropical fruit}      0.007219115 0.2414966 0.029893238 2
## [351] {frozen vegetables}  => {whipped/sour cream} 0.007930859 0.1649049 0.048093543 2
## [352] {whipped/sour cream} => {frozen vegetables} 0.007930859 0.1106383 0.071682766 2
## [353] {tropical fruit}     => {citrus fruit}        0.019928826 0.1899225 0.104931368 2
## [354] {citrus fruit}       => {tropical fruit}      0.019928826 0.2407862 0.082765633 2
## [355] {oil}                  => {root vegetables} 0.007015760 0.2500000 0.028063040 2
## [356] {domestic eggs,
##       whole milk}           => {citrus fruit}        0.005693950 0.1898305 0.029994916 2
## [357] {long life bakery product} => {fruit/vegetable juice} 0.006202339 0.1657609 0.037417387 2
## [358] {curd,
##       rolls/buns}            => {whole milk}         0.005897306 0.5858586 0.010066090 2
## [359] {rolls/buns,
##       whole milk}           => {beef}               0.006812405 0.1202873 0.056634469 2
## [360] {butter,
##       other vegetables}     => {yogurt}             0.006405694 0.3197970 0.020030503 2
## [361] {beef,
##       yogurt}               => {other vegetables} 0.005185562 0.4434783 0.011692933 2
## [362] {other vegetables,
##       sugar}                => {whole milk}         0.006304016 0.5849057 0.010777834 2
## [363] {root vegetables,

```

##	soda}	=> {other vegetables}	0.008235892	0.4426230	0.018607016	2
## [364]	{onions}	=> {whipped/sour cream}	0.005083884	0.1639344	0.031011693	2
## [365]	{berries}	=> {yogurt}	0.010574479	0.3180428	0.033248602	2
## [366]	{curd,	=> {whole milk}	0.010066090	0.5823529	0.017285206	2
##	yogurt}	=> {domestic eggs}	0.006202339	0.1445498	0.042907982	2
## [367]	{chicken}	=> {pork}	0.005592272	0.1312649	0.042602949	2
## [368]	{other vegetables,	=> {beef}	0.005185562	0.1194379	0.043416370	2
##	rolls/buns}	=> {yogurt}	0.009557702	0.3175676	0.030096594	2
## [369]	{other vegetables,	=> {other vegetables}	0.008235892	0.4402174	0.018708693	2
##	yogurt}	=> {yogurt}	0.006609049	0.3170732	0.020843925	2
## [370]	{pip fruit,	=> {root vegetables}	0.005083884	0.2475248	0.020538892	2
##	whole milk}	=> {pip fruit}	0.008134215	0.1716738	0.047381800	2
## [371]	{fruit/vegetable juice,	=> {whole milk}	0.006304016	0.5794393	0.010879512	2
##	yogurt}	=> {yogurt}	0.006304016	0.3163265	0.019928826	2
## [372]	{soda,	=> {frozen vegetables}	0.006100661	0.1088929	0.056024403	2
##	tropical fruit}	=> {other vegetables}	0.006405694	0.4375000	0.014641586	2
## [373]	{frankfurter,	=> {citrus fruit}	0.009150991	0.1871102	0.048906965	2
##	whole milk}	=> {butter}	0.006202339	0.1250000	0.049618709	2
## [374]	{other vegetables,	=> {chocolate}	0.006202339	0.1119266	0.055414337	2
##	root vegetables}	=> {pip fruit}	0.009557702	0.1705989	0.056024403	2
## [375]	{citrus fruit,	=> {whipped/sour cream}	0.006405694	0.1615385	0.039654296	2
##	whipped/sour cream}	=> {sausage}	0.005185562	0.2116183	0.024504321	2
## [376]	{citrus fruit,	=> {fruit/vegetable juice}	0.007829181	0.1627907	0.048093543	2
##	tropical fruit}	=> {frozen vegetables}	0.007829181	0.1082982	0.072292832	2
## [377]	{whole milk,	=> {whole milk}	0.008947636	0.5751634	0.015556685	2
##	yogurt}	=> {bottled water}	0.005185562	0.2487805	0.020843925	2
## [378]	{butter,	=> {other vegetables}	0.009252669	0.4354067	0.021250635	2
##	yogurt}	=> {pip fruit}	0.005185562	0.1700000	0.030503305	2
## [379]	{root vegetables,	=> {yogurt}	0.006405694	0.3134328	0.020437214	2
##	whole milk}	=> {other vegetables}	0.047381800	0.4347015	0.108998475	2
## [380]	{chocolate}	=> {root vegetables}	0.047381800	0.2448765	0.193492628	2
## [381]	{butter}	=> {whole milk}	0.009862735	0.5739645	0.017183528	2
## [382]	{whole milk,	=> {whole milk}	0.011489578	0.5736041	0.020030503	2
##	yogurt}					
## [383]	{cream cheese}					
## [384]	{hard cheese}					
## [385]	{frozen vegetables}					
## [386]	{fruit/vegetable juice}					
## [387]	{pip fruit,					
##	root vegetables}					
## [388]	{soda,					
##	tropical fruit}					
## [389]	{beef,					
##	whole milk}					
## [390]	{citrus fruit,					
##	whole milk}					
## [391]	{pip fruit,					
##	tropical fruit}					
## [392]	{root vegetables}					
## [393]	{other vegetables}					
## [394]	{curd,					
##	other vegetables}					
## [395]	{butter,					
##	other vegetables}					

```

## [396] {tropical fruit,
##       whipped/sour cream} => {whole milk} 0.007930859 0.5735294 0.013828165 2
## [397] {margarine} => {domestic eggs} 0.008337570 0.1423611 0.058566345 2
## [398] {domestic eggs} => {margarine} 0.008337570 0.1314103 0.063446873 2
## [399] {cream cheese} => {yogurt} 0.012404677 0.3128205 0.039654296 2
## [400] {fruit/vegetable juice,
##       whole milk} => {root vegetables} 0.006507372 0.2442748 0.026639553 2
## [401] {other vegetables,
##       yogurt} => {margarine} 0.005693950 0.1311475 0.043416370 2
## [402] {domestic eggs,
##       whipped/sour cream} => {whole milk} 0.005693950 0.5714286 0.009964413 2
## [403] {dessert} => {fruit/vegetable juice} 0.005998983 0.1616438 0.037112354 2
## [404] {other vegetables,
##       root vegetables,
##       tropical fruit} => {whole milk} 0.007015760 0.5702479 0.012302999 2
## [405] {other vegetables,
##       pip fruit} => {yogurt} 0.008134215 0.3112840 0.026131164 2
## [406] {curd,
##       root vegetables} => {whole milk} 0.006202339 0.5700935 0.010879512 2
## [407] {root vegetables,
##       tropical fruit} => {whole milk} 0.011997966 0.5700483 0.021047280 2
## [408] {butter,
##       whole milk} => {citrus fruit} 0.005083884 0.1845018 0.027554652 2
## [409] {bottled water,
##       whole milk} => {tropical fruit} 0.008032537 0.2337278 0.034367056 2
## [410] {other vegetables,
##       rolls/buns} => {frankfurter} 0.005592272 0.1312649 0.042602949 2
## [411] {sausage,
##       tropical fruit} => {other vegetables} 0.005998983 0.4306569 0.013929842 2
## [412] {napkins,
##       whole milk} => {yogurt} 0.006100661 0.3092784 0.019725470 2
## [413] {whole milk,
##       yogurt} => {citrus fruit} 0.010269446 0.1833031 0.056024403 2
## [414] {frozen vegetables} => {root vegetables} 0.011591256 0.2410148 0.048093543 2
## [415] {root vegetables} => {frozen vegetables} 0.011591256 0.1063433 0.108998475 2
## [416] {other vegetables,
##       rolls/buns} => {sausage} 0.008845958 0.2076372 0.042602949 2
## [417] {hamburger meat,
##       whole milk} => {other vegetables} 0.006304016 0.4275862 0.014743264 2
## [418] {pip fruit} => {citrus fruit} 0.013828165 0.1827957 0.075648195 2
## [419] {citrus fruit} => {pip fruit} 0.013828165 0.1670762 0.082765633 2
## [420] {citrus fruit,
##       whole milk} => {other vegetables} 0.013014743 0.4266667 0.030503305 2
## [421] {bottled water,
##       whole milk} => {bottled beer} 0.006100661 0.1775148 0.034367056 2
## [422] {citrus fruit,
##       pip fruit} => {other vegetables} 0.005897306 0.4264706 0.013828165 2
## [423] {curd,
##       whipped/sour cream} => {whole milk} 0.005897306 0.5631068 0.010472801 2
## [424] {root vegetables,
##       yogurt} => {whole milk} 0.014539908 0.5629921 0.025826131 2
## [425] {cream cheese,
##       yogurt} => {other vegetables} 0.005287239 0.4262295 0.012404677 2
## [426] {frozen vegetables,

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##	yogurt}	=> {other vegetables}	0.005287239	0.4262295	0.012404677	2
## [427]	{tropical fruit, yogurt}	=> {bottled water}	0.007117438	0.2430556	0.029283172	2
## [428]	{rolls/buns, tropical fruit}	=> {root vegetables}	0.005897306	0.2396694	0.024605999	2
## [429]	{sausage, whipped/sour cream}	=> {whole milk}	0.005083884	0.5617978	0.009049314	2
## [430]	{beef, rolls/buns}	=> {other vegetables}	0.005795628	0.4253731	0.013624809	2
## [431]	{other vegetables, rolls/buns}	=> {whipped/sour cream}	0.006710727	0.1575179	0.042602949	2
## [432]	{domestic eggs, whole milk}	=> {tropical fruit}	0.006914082	0.2305085	0.029994916	2
## [433]	{salty snack}	=> {fruit/vegetable juice}	0.005998983	0.1586022	0.037824098	2
## [434]	{bottled beer, yogurt}	=> {whole milk}	0.005185562	0.5604396	0.009252669	2
## [435]	{butter, rolls/buns}	=> {other vegetables}	0.005693950	0.4242424	0.013421454	2
## [436]	{brown bread, root vegetables}	=> {whole milk}	0.005693950	0.5600000	0.010167768	2
## [437]	{domestic eggs}	=> {whipped/sour cream}	0.009964413	0.1570513	0.063446873	2
## [438]	{whipped/sour cream}	=> {domestic eggs}	0.009964413	0.1390071	0.071682766	2
## [439]	{bottled water, sausage}	=> {other vegetables}	0.005083884	0.4237288	0.011997966	2
## [440]	{butter milk}	=> {yogurt}	0.008540925	0.3054545	0.027961362	2
## [441]	{citrus fruit, other vegetables, root vegetables}	=> {whole milk}	0.005795628	0.5588235	0.010371124	2
## [442]	{whipped/sour cream}	=> {root vegetables}	0.017081851	0.2382979	0.071682766	2
## [443]	{root vegetables}	=> {whipped/sour cream}	0.017081851	0.1567164	0.108998475	2
## [444]	{other vegetables, rolls/buns}	=> {domestic eggs}	0.005897306	0.1384248	0.042602949	2
## [445]	{bottled water, other vegetables}	=> {sausage}	0.005083884	0.2049180	0.024809354	2
## [446]	{meat}	=> {sausage}	0.005287239	0.2047244	0.025826131	2
## [447]	{onions}	=> {citrus fruit}	0.005592272	0.1803279	0.031011693	2
## [448]	{bottled water, soda}	=> {bottled beer}	0.005083884	0.1754386	0.028978139	2
## [449]	{curd, whole milk}	=> {root vegetables}	0.006202339	0.2373541	0.026131164	2
## [450]	{soda, yogurt}	=> {sausage}	0.005592272	0.2044610	0.027351296	2
## [451]	{long life bakery product, whole milk}	=> {other vegetables}	0.005693950	0.4210526	0.013523132	2
## [452]	{other vegetables, whole milk}	=> {tropical fruit}	0.017081851	0.2282609	0.074834774	2
## [453]	{other vegetables, root vegetables}	=> {curd}	0.005490595	0.1158798	0.047381800	2
## [454]	{frozen vegetables}	=> {butter}	0.005795628	0.1205074	0.048093543	2
## [455]	{butter}	=> {frozen vegetables}	0.005795628	0.1045872	0.055414337	2
## [456]	{butter, citrus fruit}	=> {whole milk}	0.005083884	0.5555556	0.009150991	2
## [457]	{whole milk, yogurt}	=> {domestic eggs}	0.007727504	0.1379310	0.056024403	2

## [458]	{tropical fruit, ## yogurt}	=> {other vegetables}	0.012302999	0.4201389	0.029283172	2
## [459]	{frankfurter, ## yogurt}	=> {whole milk}	0.006202339	0.5545455	0.011184545	2
## [460]	{white bread}	=> {domestic eggs}	0.005795628	0.1376812	0.042094560	2
## [461]	{pork}	=> {root vegetables}	0.013624809	0.2363316	0.057651246	2
## [462]	{root vegetables}	=> {pork}	0.013624809	0.1250000	0.108998475	2
## [463]	{root vegetables, ## whipped/sour cream}	=> {whole milk}	0.009456024	0.5535714	0.017081851	2
## [464]	{sugar, ## whole milk}	=> {other vegetables}	0.006304016	0.4189189	0.015048297	2
## [465]	{frankfurter, ## whole milk}	=> {yogurt}	0.006202339	0.3019802	0.020538892	2
## [466]	{other vegetables, ## sausage}	=> {yogurt}	0.008134215	0.3018868	0.026944586	2
## [467]	{domestic eggs, ## other vegetables}	=> {whole milk}	0.012302999	0.5525114	0.022267412	2
## [468]	{sausage, ## soda}	=> {rolls/buns}	0.009659380	0.3974895	0.024300966	2
## [469]	{long life bakery product}	=> {whipped/sour cream}	0.005795628	0.1548913	0.037417387	2
## [470]	{chicken, ## root vegetables}	=> {whole milk}	0.005998983	0.5514019	0.010879512	2
## [471]	{chicken}	=> {other vegetables}	0.017895272	0.4170616	0.042907982	2
## [472]	{butter, ## whole milk}	=> {other vegetables}	0.011489578	0.4169742	0.027554652	2
## [473]	{soft cheese}	=> {other vegetables}	0.007117438	0.4166667	0.017081851	2
## [474]	{other vegetables, ## whipped/sour cream, ## yogurt}	=> {whole milk}	0.005592272	0.5500000	0.010167768	2
## [475]	{brown bread, ## whole milk}	=> {tropical fruit}	0.005693950	0.2258065	0.025216065	2
## [476]	{pork, ## rolls/buns}	=> {whole milk}	0.006202339	0.5495495	0.011286223	2
## [477]	{hamburger meat}	=> {other vegetables}	0.013828165	0.4159021	0.033248602	2
## [478]	{citrus fruit, ## domestic eggs}	=> {whole milk}	0.005693950	0.5490196	0.010371124	2
## [479]	{other vegetables, ## pastry}	=> {tropical fruit}	0.005083884	0.2252252	0.022572445	2
## [480]	{frankfurter, ## tropical fruit}	=> {whole milk}	0.005185562	0.5483871	0.009456024	2
## [481]	{fruit/vegetable juice, ## whole milk}	=> {tropical fruit}	0.005998983	0.2251908	0.026639553	2
## [482]	{butter, ## whole milk}	=> {tropical fruit}	0.006202339	0.2250923	0.027554652	2
## [483]	{sausage, ## yogurt}	=> {other vegetables}	0.008134215	0.4145078	0.019623793	2
## [484]	{chicken, ## rolls/buns}	=> {whole milk}	0.005287239	0.5473684	0.009659380	2
## [485]	{sausage, ## whole milk}	=> {pastry}	0.005693950	0.1904762	0.029893238	2
## [486]	{frozen vegetables, ## whole milk}	=> {yogurt}	0.006100661	0.2985075	0.020437214	2
## [487]	{baking powder}	=> {other vegetables}	0.007320793	0.4137931	0.017691917	2
## [488]	{whole milk,					

```

##      yogurt}          => {margarine}          0.007015760 0.1252269 0.056024403 2
## [489] {butter}          => {root vegetables} 0.012913066 0.2330275 0.055414337 2
## [490] {root vegetables} => {butter}           0.012913066 0.1184701 0.108998475 2
## [491] {root vegetables,  => {sausage}          0.005185562 0.2007874 0.025826131 2
##      yogurt}          => {yogurt}            0.022267412 0.2975543 0.074834774 2
## [492] {other vegetables,=> {yogurt}            0.014539908 0.2972973 0.048906965 2
##      whole milk}         => {yogurt}            0.005287239 0.2971429 0.017793594 2
## [493] {root vegetables,  => {yogurt}            0.007219115 0.2970711 0.024300966 2
##      whole milk}         => {margarine}          0.005897306 0.1244635 0.047381800 2
## [494] {frozen vegetables,=> {whole milk}          0.009659380 0.5428571 0.017793594 2
##      other vegetables}   => {whole milk}          0.005185562 0.5425532 0.009557702 2
## [495] {rolls/buns,        => {whole milk}          0.006507372 0.5423729 0.011997966 2
##      root vegetables}    => {tropical fruit}  0.005388917 0.2226891 0.024199288 2
## [496] {other vegetables,  => {citrus fruit}        0.007625826 0.1756440 0.043416370 2
##      root vegetables}    => {tropical fruit}  0.005998983 0.2226415 0.026944586 2
## [497] {frozen vegetables,  => {other vegetables}  0.012302999 0.4101695 0.029994916 2
##      other vegetables}   => {margarine}          0.009252669 0.1236413 0.074834774 2
## [498] {hygiene articles,  => {whole milk}          0.007727504 0.5390071 0.014336553 2
##      other vegetables}   => {yogurt}             0.007117438 0.2941176 0.024199288 2
## [499] {fruit/vegetable juice,=> {yogurt}            0.006100661 0.1522843 0.040061007 2
##      root vegetables}    => {rolls/buns}          0.006609049 0.1166966 0.056634469 2
## [500] {bottled water,       => {whole milk}          0.006710727 0.4074074 0.016471784 2
##      rolls/buns}          => {margarine}          0.007930859 0.5379310 0.014743264 2
## [501] {other vegetables,  => {other vegetables}  0.005795628 0.1334895 0.043416370 2
##      yogurt}              => {domestic eggs}     0.007219115 0.2204969 0.032740214 2
## [502] {other vegetables,  => {tropical fruit}  0.013014743 0.1739130 0.074834774 2
##      sausage}             => {citrus fruit}        0.006609049 0.2927928 0.022572445 2
## [503] {domestic eggs,       => {yogurt}            0.006609049 0.2927928 0.022572445 2
##      whole milk}           => {rolls/buns}          0.005083884 0.4098361 0.012404677 2
## [504] {domestic eggs,       => {whole milk}          0.009252669 0.1236413 0.074834774 2
##      soda}                 => {margarine}          0.007727504 0.5390071 0.014336553 2
## [505] {other vegetables,  => {whole milk}          0.007117438 0.2941176 0.024199288 2
##      whole milk}           => {yogurt}             0.006100661 0.1522843 0.040061007 2
## [506] {domestic eggs,       => {margarine}          0.006609049 0.1166966 0.056634469 2
##      yogurt}               => {whole milk}          0.006710727 0.4074074 0.016471784 2
## [507] {bottled water,       => {yogurt}            0.007930859 0.5379310 0.014743264 2
##      rolls/buns}           => {rolls/buns}          0.005795628 0.1334895 0.043416370 2
## [508] {soda,                  => {fruit/vegetable juice} 0.007219115 0.2204969 0.032740214 2
##      whole milk}            => {butter}             0.013014743 0.1739130 0.074834774 2
## [509] {rolls/buns,           => {other vegetables}  0.006609049 0.1166966 0.056634469 2
##      whole milk}            => {margarine}          0.006710727 0.4074074 0.016471784 2
## [510] {cream cheese,         => {whole milk}          0.007930859 0.5379310 0.014743264 2
##      whole milk}             => {other vegetables}  0.005795628 0.1334895 0.043416370 2
## [511] {margarine,              => {domestic eggs}     0.007219115 0.2204969 0.032740214 2
##      rolls/buns}             => {tropical fruit}  0.013014743 0.1739130 0.074834774 2
## [512] {other vegetables,  => {citrus fruit}        0.006609049 0.1166966 0.056634469 2
##      yogurt}                => {yogurt}            0.006710727 0.4074074 0.016471784 2
## [513] {other vegetables,  => {yogurt}            0.007930859 0.5379310 0.014743264 2
##      soda}                   => {domestic eggs}     0.005795628 0.1334895 0.043416370 2
## [514] {other vegetables,  => {tropical fruit}  0.007219115 0.2204969 0.032740214 2
##      whole milk}             => {citrus fruit}        0.013014743 0.1739130 0.074834774 2
## [515] {other vegetables,  => {yogurt}            0.006609049 0.1166966 0.056634469 2
##      pastry}                 => {yogurt}            0.006710727 0.4074074 0.016471784 2
## [516] {sausage,                  => {yogurt}            0.007930859 0.5379310 0.014743264 2
##      yogurt}                => {rolls/buns}          0.005795628 0.1334895 0.043416370 2

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##	whole milk}	=> {yogurt}	0.008744281	0.2925170	0.029893238	2
## [517]	{frozen vegetables, root vegetables}	=> {whole milk}	0.006202339	0.5350877	0.011591256	2
## [518]	{hard cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321	2
## [519]	{sliced cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321	2
## [520]	{rolls/buns, whipped/sour cream}	=> {whole milk}	0.007829181	0.5347222	0.014641586	2
## [521]	{hygiene articles, whole milk}	=> {other vegetables}	0.005185562	0.4047619	0.012811388	2
## [522]	{grapes}	=> {other vegetables}	0.009049314	0.4045455	0.022369090	2
## [523]	{domestic eggs, yogurt}	=> {other vegetables}	0.005795628	0.4042553	0.014336553	2
## [524]	{bottled water, fruit/vegetable juice}	=> {soda}	0.005185562	0.3642857	0.014234875	2
## [525]	{white bread}	=> {frankfurter}	0.005185562	0.1231884	0.042094560	2
## [526]	{long life bakery product, other vegetables}	=> {whole milk}	0.005693950	0.5333333	0.010676157	2
## [527]	{brown bread, tropical fruit}	=> {whole milk}	0.005693950	0.5333333	0.010676157	2
## [528]	{tropical fruit, whole milk}	=> {other vegetables}	0.017081851	0.4038462	0.042297916	2
## [529]	{sausage, shopping bags}	=> {soda}	0.005693950	0.3636364	0.015658363	2
## [530]	{cream cheese, yogurt}	=> {whole milk}	0.006609049	0.5327869	0.012404677	2
## [531]	{sausage, shopping bags}	=> {rolls/buns}	0.005998983	0.3831169	0.015658363	2
## [532]	{whipped/sour cream}	=> {other vegetables}	0.028876462	0.4028369	0.071682766	2
## [533]	{other vegetables}	=> {whipped/sour cream}	0.028876462	0.1492380	0.193492628	2
## [534]	{pip fruit, whole milk}	=> {citrus fruit}	0.005185562	0.1722973	0.030096594	2
## [535]	{whole milk, yogurt}	=> {napkins}	0.006100661	0.1088929	0.056024403	2
## [536]	{tropical fruit, whole milk}	=> {frankfurter}	0.005185562	0.1225962	0.042297916	2
## [537]	{pip fruit, yogurt}	=> {whole milk}	0.009557702	0.5310734	0.017996950	2
## [538]	{other vegetables, rolls/buns}	=> {margarine}	0.005185562	0.1217184	0.042602949	2
## [539]	{margarine, whole milk}	=> {yogurt}	0.007015760	0.2899160	0.024199288	2
## [540]	{whole milk, yogurt}	=> {beef}	0.006100661	0.1088929	0.056024403	2
## [541]	{white bread}	=> {pip fruit}	0.006609049	0.1570048	0.042094560	2
## [542]	{tropical fruit, whole milk}	=> {brown bread}	0.005693950	0.1346154	0.042297916	2
## [543]	{newspapers, other vegetables}	=> {yogurt}	0.005592272	0.2894737	0.019318760	2
## [544]	{yogurt}	=> {whipped/sour cream}	0.020742247	0.1486880	0.139501779	2
## [545]	{whipped/sour cream}	=> {yogurt}	0.020742247	0.2893617	0.071682766	2
## [546]	{bottled water, whole milk}	=> {citrus fruit}	0.005897306	0.1715976	0.034367056	2
## [547]	{domestic eggs}	=> {root vegetables}	0.014336553	0.2259615	0.063446873	2
## [548]	{root vegetables}	=> {domestic eggs}	0.014336553	0.1315299	0.108998475	2

## [549]	{brown bread, whole milk}	=> {root vegetables}	0.005693950	0.2258065	0.025216065	2
## [550]	{margarine, other vegetables}	=> {yogurt}	0.005693950	0.2886598	0.019725470	2
## [551]	{margarine}	=> {butter}	0.006710727	0.1145833	0.058566345	2
## [552]	{butter}	=> {margarine}	0.006710727	0.1211009	0.055414337	2
## [553]	{margarine, yogurt}	=> {other vegetables}	0.005693950	0.4000000	0.014234875	2
## [554]	{rolls/buns, whole milk}	=> {root vegetables}	0.012709710	0.2244165	0.056634469	2
## [555]	{beef, whole milk}	=> {yogurt}	0.006100661	0.2870813	0.021250635	2
## [556]	{sliced cheese}	=> {tropical fruit}	0.005287239	0.2157676	0.024504321	2
## [557]	{whole milk, yogurt}	=> {other vegetables}	0.022267412	0.3974592	0.056024403	2
## [558]	{whipped/sour cream, yogurt}	=> {whole milk}	0.010879512	0.5245098	0.020742247	2
## [559]	{waffles}	=> {pastry}	0.007015760	0.1825397	0.038434164	2
## [560]	{rolls/buns, root vegetables}	=> {whole milk}	0.012709710	0.5230126	0.024300966	2
## [561]	{baking powder}	=> {whole milk}	0.009252669	0.5229885	0.017691917	2
## [562]	{other vegetables, rolls/buns, yogurt}	=> {whole milk}	0.005998983	0.5221239	0.011489578	2
## [563]	{beef, yogurt}	=> {whole milk}	0.006100661	0.5217391	0.011692933	2
## [564]	{soda, whole milk}	=> {domestic eggs}	0.005185562	0.1294416	0.040061007	2
## [565]	{coffee, yogurt}	=> {whole milk}	0.005083884	0.5208333	0.009761057	2
## [566]	{rolls/buns, yogurt}	=> {citrus fruit}	0.005795628	0.1686391	0.034367056	2
## [567]	{cream cheese}	=> {pip fruit}	0.006100661	0.1538462	0.039654296	2
## [568]	{fruit/vegetable juice, whole milk}	=> {other vegetables}	0.010472801	0.3931298	0.026639553	2
## [569]	{pip fruit, sausage}	=> {whole milk}	0.005592272	0.5188679	0.010777834	2
## [570]	{other vegetables, sausage}	=> {shopping bags}	0.005388917	0.2000000	0.026944586	2
## [571]	{pastry, root vegetables}	=> {whole milk}	0.005693950	0.5185185	0.010981190	2
## [572]	{sausage, tropical fruit}	=> {whole milk}	0.007219115	0.5182482	0.013929842	2
## [573]	{other vegetables, pip fruit}	=> {whole milk}	0.013523132	0.5175097	0.026131164	2
## [574]	{tropical fruit, yogurt}	=> {whole milk}	0.015149975	0.5173611	0.029283172	2
## [575]	{pastry, yogurt}	=> {whole milk}	0.009150991	0.5172414	0.017691917	2
## [576]	{citrus fruit, root vegetables}	=> {whole milk}	0.009150991	0.5172414	0.017691917	2
## [577]	{root vegetables, sausage}	=> {whole milk}	0.007727504	0.5170068	0.014946619	2
## [578]	{brown bread,					

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##      whole milk}          => {yogurt}          0.007117438  0.2822581  0.025216065  2
## [579] {pastry,
##      whole milk}          => {pip fruit}        0.005083884  0.1529052  0.033248602  2
## [580] {cream cheese}      => {domestic eggs}    0.005083884  0.1282051  0.039654296  2
## [581] {curd}              => {margarine}        0.006304016  0.1183206  0.053279105  2
## [582] {margarine}         => {curd}            0.006304016  0.1076389  0.058566345  2
## [583] {beef}              => {margarine}        0.006202339  0.1182171  0.052465684  2
## [584] {margarine}         => {beef}             0.006202339  0.1059028  0.058566345  2
## [585] {bottled water,     => {yogurt}          0.009659380  0.2810651  0.034367056  2
##      whole milk}          => {pip fruit}        0.007320793  0.1522199  0.048093543  2
## [586] {frozen vegetables} => {whole milk}        0.022267412  0.5128806  0.043416370  2
## [587] {other vegetables,  => {fruit/vegetable juice} 0.008032537  0.1449541  0.055414337  2
##      yogurt}              => {butter}           0.008032537  0.1111111  0.072292832  2
## [588] {butter}             => {yogurt}           0.029283172  0.2790698  0.104931368  2
## [589] {fruit/vegetable juice}=> {tropical fruit}  0.029283172  0.2099125  0.139501779  2
## [590] {tropical fruit}     => {yogurt}           0.009659380  0.2810651  0.034367056  2
## [591] {yogurt}              => {tropical fruit}  0.009150991  0.1651376  0.055414337  1
## [592] {oil,                 => {whole milk}        0.009150991  0.1105651  0.082765633  1
##      other vegetables}     => {citrus fruit}      0.009456024  0.3858921  0.024504321  1
## [593] {butter}              => {butter}            0.005083884  0.5102041  0.009964413  1
## [594] {citrus fruit}        => {other vegetables} 0.009964413  0.3858268  0.025826131  1
## [595] {hard cheese}         => {butter}           0.005795628  0.1045872  0.055414337  1
## [596] {other vegetables,   => {sausage}          0.005795628  0.1104651  0.052465684  1
##      yogurt}               => {other vegetables} 0.008134215  0.1873536  0.043416370  1
## [597] {meat}                => {other vegetables} 0.009964413  0.3858268  0.025826131  1
## [598] {butter}              => {beef}              0.005998983  0.3856209  0.015556685  1
## [599] {beef}                => {butter}           0.005998983  0.3846154  0.013218099  1
## [600] {rolls/buns,          => {shopping bags}    0.005998983  0.1960133  0.030604982  1
##      whole milk,            => {whole milk}        0.006202339  0.5083333  0.012201322  1
##      yogurt}               => {whipped/sour cream} 0.006202339  0.1428571  0.057651246  1
## [601] {pork}                => {pork}             0.006202339  0.1148936  0.071682766  1
## [602] {whipped/sour cream} => {shopping bags}    0.005998983  0.1960133  0.030604982  1
## [603] {rolls/buns,          => {whole milk}        0.005998983  0.3856209  0.015556685  1
##      sausage}              => {other vegetables} 0.005998983  0.3846154  0.013218099  1
## [604] {other vegetables,   => {whole milk}        0.006710727  0.5076923  0.013218099  1
##      rolls/buns,            => {yogurt}           0.006710727  0.2771739  0.018708693  1
##      root vegetables}      => {other vegetables} 0.006710727  0.1435897  0.039654296  1
## [605] {pastry,               => {whole milk}        0.005185562  0.5083333  0.012201322  1
##      tropical fruit}        => {yogurt}           0.005185562  0.2771739  0.018708693  1
## [606] {pastry,               => {fruit/vegetable juice} 0.005693950  0.1435897  0.039654296  1
##      tropical fruit}        => {whole milk}        0.005693950  0.2771739  0.018708693  1
## [607] {brown bread,          => {whole milk}        0.014641586  0.5070423  0.028876462  1
##      other vegetables}      => {yogurt}           0.014641586  0.2766990  0.020945602  1
## [608] {cream cheese}         => {bottled water}     0.005388917  0.2190083  0.024605999  1
## [609] {other vegetables,   => {yogurt}           0.005388917  0.2190083  0.024605999  1
##      whipped/sour cream}    => {bottled water}     0.005388917  0.2190083  0.024605999  1
## [610] {pastry,               => {bottled water}     0.005388917  0.2190083  0.024605999  1
##      rolls/buns}            => {tropical fruit}   0.005388917  0.2190083  0.024605999  1
## [611] {rolls/buns,          => {yogurt}           0.005388917  0.2190083  0.024605999  1
##      tropical fruit}        => {bottled water}     0.005388917  0.2190083  0.024605999  1
## [612] {fruit/vegetable juice,=> {yogurt}           0.005388917  0.2190083  0.024605999  1
##      soda}                  => {bottled water}     0.005388917  0.2190083  0.024605999  1
## [613] {UHT-milk}             => {tropical fruit}  0.005388917  0.2190083  0.024605999  1
## [614] {white bread}          => {tropical fruit}  0.005388917  0.2190083  0.024605999  1

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## [615]	{shopping bags, whole milk}	=> {root vegetables}	0.005287239	0.2157676	0.024504321	1
## [616]	{fruit/vegetable juice, yogurt}	=> {whole milk}	0.009456024	0.5054348	0.018708693	1
## [617]	{pip fruit, whole milk}	=> {sausage}	0.005592272	0.1858108	0.030096594	1
## [618]	{margarine, whole milk}	=> {other vegetables}	0.009252669	0.3823529	0.024199288	1
## [619]	{citrus fruit}	=> {domestic eggs}	0.010371124	0.1253071	0.082765633	1
## [620]	{domestic eggs}	=> {citrus fruit}	0.010371124	0.1634615	0.063446873	1
## [621]	{newspapers, root vegetables}	=> {whole milk}	0.005795628	0.5044248	0.011489578	1
## [622]	{ham}	=> {tropical fruit}	0.005388917	0.2070312	0.026029487	1
## [623]	{pastry, whole milk}	=> {yogurt}	0.009150991	0.2752294	0.033248602	1
## [624]	{rolls/buns, whole milk}	=> {yogurt}	0.015556685	0.2746858	0.056634469	1
## [625]	{fruit/vegetable juice, whole milk}	=> {bottled water}	0.005795628	0.2175573	0.026639553	1
## [626]	{tropical fruit, whole milk}	=> {fruit/vegetable juice}	0.005998983	0.1418269	0.042297916	1
## [627]	{citrus fruit}	=> {root vegetables}	0.017691917	0.2137592	0.082765633	1
## [628]	{root vegetables}	=> {citrus fruit}	0.017691917	0.1623134	0.108998475	1
## [629]	{whole milk, yogurt}	=> {brown bread}	0.007117438	0.1270417	0.056024403	1
## [630]	{berries}	=> {citrus fruit}	0.005388917	0.1620795	0.033248602	1
## [631]	{frozen vegetables, rolls/buns}	=> {whole milk}	0.005083884	0.5000000	0.010167768	1
## [632]	{beef, rolls/buns}	=> {whole milk}	0.006812405	0.5000000	0.013624809	1
## [633]	{pork, root vegetables}	=> {whole milk}	0.006812405	0.5000000	0.013624809	1
## [634]	{frankfurter, root vegetables}	=> {whole milk}	0.005083884	0.5000000	0.010167768	1
## [635]	{brown bread, other vegetables}	=> {whole milk}	0.009354347	0.5000000	0.018708693	1
## [636]	{soda, whole milk}	=> {brown bread}	0.005083884	0.1269036	0.040061007	1
## [637]	{rolls/buns, whole milk}	=> {curd}	0.005897306	0.1041293	0.056634469	1
## [638]	{bottled water, whole milk}	=> {root vegetables}	0.007320793	0.2130178	0.034367056	1
## [639]	{other vegetables, root vegetables}	=> {yogurt}	0.012913066	0.2725322	0.047381800	1
## [640]	{curd, whole milk}	=> {other vegetables}	0.009862735	0.3774319	0.026131164	1
## [641]	{coffee, whole milk}	=> {yogurt}	0.005083884	0.2717391	0.018708693	1
## [642]	{fruit/vegetable juice, other vegetables}	=> {whole milk}	0.010472801	0.4975845	0.021047280	1
## [643]	{chicken}	=> {citrus fruit}	0.006914082	0.1611374	0.042907982	1
## [644]	{domestic eggs, rolls/buns}	=> {other vegetables}	0.005897306	0.3766234	0.015658363	1
## [645]	{butter}	=> {whole milk}	0.027554652	0.4972477	0.055414337	1

## [646]	{whole milk}	=> {butter}	0.027554652	0.1078392	0.255516014	1
## [647]	{newspapers,	=> {root vegetables}	0.005795628	0.2118959	0.027351296	1
##	whole milk}	=> {citrus fruit}	0.008439248	0.1608527	0.052465684	1
## [648]	{beef}	=> {beef}	0.008439248	0.1019656	0.082765633	1
## [649]	{citrus fruit}	=> {other vegetables}	0.019725470	0.3759690	0.052465684	1
## [650]	{beef}	=> {beef}	0.019725470	0.1019443	0.193492628	1
## [651]	{other vegetables}	=> {other vegetables}	0.005083884	0.3759398	0.013523132	1
## [652]	{bottled water,	=> {pip fruit}	0.007829181	0.1469466	0.053279105	1
##	citrus fruit}	=> {curd}	0.007829181	0.1034946	0.075648195	1
## [653]	{curd}	=> {other vegetables}	0.021657346	0.3756614	0.057651246	1
## [654]	{pip fruit}	=> {pork}	0.021657346	0.1119285	0.193492628	1
## [655]	{pork}	=> {tropical fruit}	0.006710727	0.2037037	0.032943569	1
## [656]	{other vegetables}	=> {whole milk}	0.006100661	0.4958678	0.012302999	1
## [657]	{hygiene articles}	=> {citrus fruit}	0.005287239	0.1604938	0.032943569	1
## [658]	{napkins,	=> {fruit/vegetable juice}	0.010472801	0.1399457	0.074834774	1
##	yogurt}	=> {yogurt}	0.011489578	0.2696897	0.042602949	1
## [659]	{hygiene articles}	=> {other vegetables}	0.006609049	0.3735632	0.017691917	1
## [660]	{other vegetables,	=> {fruit/vegetable juice}	0.006609049	0.1394850	0.047381800	1
##	whole milk}	=> {whole milk}	0.007015760	0.4928571	0.014234875	1
## [661]	{other vegetables,	=> {whipped/sour cream}	0.007829181	0.1382406	0.056634469	1
##	rolls/buns}	=> {other vegetables}	0.007625826	0.3731343	0.020437214	1
## [662]	{pastry,	=> {pip fruit}	0.008540925	0.1458333	0.058566345	1
##	yogurt}	=> {margarine}	0.008540925	0.1129032	0.075648195	1
## [663]	{other vegetables,	=> {whole milk}	0.006609049	0.4924242	0.013421454	1
##	root vegetables}	=> {root vegetables}	0.007219115	0.2100592	0.034367056	1
## [664]	{margarine,	=> {brown bread}	0.009354347	0.1250000	0.074834774	1
##	yogurt}	=> {curd}	0.006507372	0.1025641	0.063446873	1
## [665]	{rolls/buns,	=> {domestic eggs}	0.006507372	0.1221374	0.053279105	1
##	whole milk}	=> {whole milk}	0.006100661	0.4918033	0.012404677	1
## [666]	{bottled beer,	=> {tropical fruit}	0.006710727	0.2018349	0.033248602	1
##	whole milk}	=> {tropical fruit}	0.006710727	0.2018349	0.033248602	1
## [667]	{margarine}	=> {napkins}	0.006710727	0.2018349	0.033248602	1
## [668]	{pip fruit}	=> {whipped/sour cream}	0.007219115	0.1378641	0.052364006	1
## [669]	{butter,	=> {whole milk}	0.026131164	0.4904580	0.053279105	1
##	rolls/buns}	=> {curd}	0.026131164	0.1022682	0.255516014	1
## [670]	{rolls/buns,	=> {other vegetables}	0.007625826	0.3712871	0.020538892	1
##	yogurt}	=> {other vegetables}	0.009354347	0.3709677	0.025216065	1
## [671]	{other vegetables,					
##	whole milk}					
## [672]	{domestic eggs}					
## [673]	{curd}					
## [674]	{frozen vegetables,					
##	yogurt}					
## [675]	{berries}					
## [676]	{pastry,					
##	whole milk}					
## [677]	{whipped/sour cream}					
## [678]	{napkins}					
## [679]	{curd}					
## [680]	{whole milk}					
## [681]	{frankfurter,					
##	whole milk}					
## [682]	{brown bread,					
##	whole milk}					

## [683]	{butter milk}	=> {other vegetables}	0.010371124	0.3709091	0.027961362	1
## [684]	{brown bread, yogurt}	=> {whole milk}	0.007117438	0.4895105	0.014539908	1
## [685]	{other vegetables, root vegetables}	=> {whole milk}	0.023182511	0.4892704	0.047381800	1
## [686]	{cream cheese, other vegetables}	=> {whole milk}	0.006710727	0.4888889	0.013726487	1
## [687]	{salty snack}	=> {whipped/sour cream}	0.005185562	0.1370968	0.037824098	1
## [688]	{frozen vegetables}	=> {other vegetables}	0.017793594	0.3699789	0.048093543	1
## [689]	{soda, whole milk}	=> {whipped/sour cream}	0.005490595	0.1370558	0.040061007	1
## [690]	{cat food}	=> {yogurt}	0.006202339	0.2663755	0.023284189	1
## [691]	{sliced cheese}	=> {other vegetables}	0.009049314	0.3692946	0.024504321	1
## [692]	{dessert}	=> {yogurt}	0.009862735	0.2657534	0.037112354	1
## [693]	{rolls/buns, whole milk}	=> {pork}	0.006202339	0.1095153	0.056634469	1
## [694]	{flour}	=> {whole milk}	0.008439248	0.4853801	0.017386884	1
## [695]	{chocolate}	=> {fruit/vegetable juice}	0.006812405	0.1372951	0.049618709	1
## [696]	{pip fruit, whole milk}	=> {pastry}	0.005083884	0.1689189	0.030096594	1
## [697]	{pork}	=> {margarine}	0.006405694	0.1111111	0.057651246	1
## [698]	{margarine}	=> {pork}	0.006405694	0.1093750	0.058566345	1
## [699]	{rolls/buns, yogurt}	=> {pastry}	0.005795628	0.1686391	0.034367056	1
## [700]	{butter}	=> {yogurt}	0.014641586	0.2642202	0.055414337	1
## [701]	{yogurt}	=> {butter}	0.014641586	0.1049563	0.139501779	1
## [702]	{citrus fruit, other vegetables}	=> {yogurt}	0.007625826	0.2640845	0.028876462	1
## [703]	{pip fruit}	=> {root vegetables}	0.015556685	0.2056452	0.075648195	1
## [704]	{root vegetables}	=> {pip fruit}	0.015556685	0.1427239	0.108998475	1
## [705]	{pip fruit, rolls/buns}	=> {other vegetables}	0.005083884	0.3649635	0.013929842	1
## [706]	{other vegetables, soda}	=> {pastry}	0.005490595	0.1677019	0.032740214	1
## [707]	{beef, other vegetables}	=> {yogurt}	0.005185562	0.2628866	0.019725470	1
## [708]	{newspapers, yogurt}	=> {other vegetables}	0.005592272	0.3642384	0.015353330	1
## [709]	{whole milk, yogurt}	=> {frankfurter}	0.006202339	0.1107078	0.056024403	1
## [710]	{citrus fruit}	=> {yogurt}	0.021657346	0.2616708	0.082765633	1
## [711]	{yogurt}	=> {citrus fruit}	0.021657346	0.1552478	0.139501779	1
## [712]	{frankfurter}	=> {domestic eggs}	0.007015760	0.1189655	0.058973055	1
## [713]	{domestic eggs}	=> {frankfurter}	0.007015760	0.1105769	0.063446873	1
## [714]	{soda, whole milk}	=> {yogurt}	0.010472801	0.2614213	0.040061007	1
## [715]	{hard cheese}	=> {yogurt}	0.006405694	0.2614108	0.024504321	1
## [716]	{flour}	=> {other vegetables}	0.006304016	0.3625731	0.017386884	1
## [717]	{rolls/buns, yogurt}	=> {bottled water}	0.007117438	0.2071006	0.034367056	1
## [718]	{curd}	=> {root vegetables}	0.010879512	0.2041985	0.053279105	1
## [719]	{butter milk}	=> {tropical fruit}	0.005490595	0.1963636	0.027961362	1
## [720]	{butter}	=> {other vegetables}	0.020030503	0.3614679	0.055414337	1
## [721]	{other vegetables}	=> {butter}	0.020030503	0.1035208	0.193492628	1

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## [722] {coffee,
##       other vegetables} => {whole milk} 0.006405694 0.4772727 0.013421454 1
## [723] {domestic eggs,
##       other vegetables} => {yogurt} 0.005795628 0.2602740 0.022267412 1
## [724] {pastry,
##       pip fruit} => {whole milk} 0.005083884 0.4761905 0.010676157 1
## [725] {soda,
##       whole milk} => {root vegetables} 0.008134215 0.2030457 0.040061007 1
## [726] {other vegetables,
##       tropical fruit} => {whole milk} 0.017081851 0.4759207 0.035892222 1
## [727] {soda,
##       whole milk} => {tropical fruit} 0.007829181 0.1954315 0.040061007 1
## [728] {frankfurter} => {brown bread} 0.007117438 0.1206897 0.058973055 1
## [729] {brown bread} => {frankfurter} 0.007117438 0.1097179 0.064870361 1
## [730] {herbs} => {whole milk} 0.007727504 0.4750000 0.016268429 1
## [731] {rolls/buns,
##       yogurt} => {sausage} 0.005998983 0.1745562 0.034367056 1
## [732] {citrus fruit,
##       yogurt} => {whole milk} 0.010269446 0.4741784 0.021657346 1
## [733] {fruit/vegetable juice} => {yogurt} 0.018708693 0.2587904 0.072292832 1
## [734] {yogurt} => {fruit/vegetable juice} 0.018708693 0.1341108 0.139501779 1
## [735] {frankfurter} => {margarine} 0.006405694 0.1086207 0.058973055 1
## [736] {margarine} => {frankfurter} 0.006405694 0.1093750 0.058566345 1
## [737] {soda,
##       whipped/sour cream} => {whole milk} 0.005490595 0.4736842 0.011591256 1
## [738] {rolls/buns,
##       yogurt} => {newspapers} 0.005083884 0.1479290 0.034367056 1
## [739] {bottled water,
##       yogurt} => {soda} 0.007422471 0.3230088 0.022979156 1
## [740] {rolls/buns,
##       shopping bags} => {soda} 0.006304016 0.3229167 0.019522115 1
## [741] {domestic eggs} => {whole milk} 0.029994916 0.4727564 0.063446873 1
## [742] {whole milk} => {domestic eggs} 0.029994916 0.1173896 0.255516014 1
## [743] {pickled vegetables} => {other vegetables} 0.006405694 0.3579545 0.017895272 1
## [744] {bottled beer,
##       bottled water} => {soda} 0.005083884 0.3225806 0.015760041 1
## [745] {frozen vegetables} => {yogurt} 0.012404677 0.2579281 0.048093543 1
## [746] {ham} => {yogurt} 0.006710727 0.2578125 0.026029487 1
## [747] {citrus fruit,
##       rolls/buns} => {other vegetables} 0.005998983 0.3575758 0.016776817 1
## [748] {rolls/buns,
##       whole milk} => {tropical fruit} 0.010981190 0.1938959 0.056634469 1
## [749] {newspapers,
##       rolls/buns} => {yogurt} 0.005083884 0.2577320 0.019725470 1
## [750] {domestic eggs,
##       whole milk} => {yogurt} 0.007727504 0.2576271 0.029994916 1
## [751] {napkins,
##       other vegetables} => {whole milk} 0.006812405 0.4718310 0.014438231 1
## [752] {bottled beer,
##       other vegetables} => {whole milk} 0.007625826 0.4716981 0.016166751 1
## [753] {frankfurter,
##       other vegetables} => {rolls/buns} 0.005592272 0.3395062 0.016471784 1
## [754] {chicken,
##       other vegetables} => {whole milk} 0.008439248 0.4715909 0.017895272 1

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## [755]	{waffles}	=> {whipped/sour cream}	0.005083884	0.1322751	0.038434164	1
## [756]	{frozen meals}	=> {tropical fruit}	0.005490595	0.1935484	0.028368073	1
## [757]	{brown bread, yogurt}	=> {other vegetables}	0.005185562	0.3566434	0.014539908	1
## [758]	{other vegetables, yogurt}	=> {brown bread}	0.005185562	0.1194379	0.043416370	1
## [759]	{root vegetables, whole milk}	=> {fruit/vegetable juice}	0.006507372	0.1330561	0.048906965	1
## [760]	{tropical fruit}	=> {root vegetables}	0.021047280	0.2005814	0.104931368	1
## [761]	{root vegetables}	=> {tropical fruit}	0.021047280	0.1930970	0.108998475	1
## [762]	{rolls/buns, whole milk}	=> {domestic eggs}	0.006609049	0.1166966	0.056634469	1
## [763]	{tropical fruit}	=> {whipped/sour cream}	0.013828165	0.1317829	0.104931368	1
## [764]	{whipped/sour cream}	=> {tropical fruit}	0.013828165	0.1929078	0.071682766	1
## [765]	{other vegetables, pork}	=> {whole milk}	0.010167768	0.4694836	0.021657346	1
## [766]	{curd}	=> {tropical fruit}	0.010269446	0.1927481	0.053279105	1
## [767]	{bottled water, soda}	=> {yogurt}	0.007422471	0.2561404	0.028978139	1
## [768]	{whole milk, yogurt}	=> {pastry}	0.009150991	0.1633394	0.056024403	1
## [769]	{beef, other vegetables}	=> {whole milk}	0.009252669	0.4690722	0.019725470	1
## [770]	{margarine, other vegetables}	=> {whole milk}	0.009252669	0.4690722	0.019725470	1
## [771]	{oil}	=> {other vegetables}	0.009964413	0.3550725	0.028063040	1
## [772]	{whipped/sour cream}	=> {citrus fruit}	0.010879512	0.1517730	0.071682766	1
## [773]	{citrus fruit}	=> {whipped/sour cream}	0.010879512	0.1314496	0.082765633	1
## [774]	{other vegetables, pastry}	=> {whole milk}	0.010574479	0.4684685	0.022572445	1
## [775]	{napkins}	=> {tropical fruit}	0.010066090	0.1922330	0.052364006	1
## [776]	{bottled water, root vegetables}	=> {whole milk}	0.007320793	0.4675325	0.015658363	1
## [777]	{processed cheese}	=> {soda}	0.005287239	0.3190184	0.016573462	1
## [778]	{bottled water, yogurt}	=> {other vegetables}	0.008134215	0.3539823	0.022979156	1
## [779]	{napkins}	=> {fruit/vegetable juice}	0.006914082	0.1320388	0.052364006	1
## [780]	{shopping bags, yogurt}	=> {other vegetables}	0.005388917	0.3533333	0.015251652	1
## [781]	{other vegetables, soda}	=> {yogurt}	0.008337570	0.2546584	0.032740214	1
## [782]	{white bread}	=> {sausage}	0.007219115	0.1714976	0.042094560	1
## [783]	{curd, yogurt}	=> {other vegetables}	0.006100661	0.3529412	0.017285206	1
## [784]	{berries}	=> {root vegetables}	0.006609049	0.1987768	0.033248602	1
## [785]	{pastry, whole milk}	=> {sausage}	0.005693950	0.1712538	0.033248602	1
## [786]	{detergent}	=> {whole milk}	0.008947636	0.4656085	0.019217082	1
## [787]	{citrus fruit, yogurt}	=> {other vegetables}	0.007625826	0.3521127	0.021657346	1
## [788]	{white bread}	=> {whipped/sour cream}	0.005490595	0.1304348	0.042094560	1
## [789]	{chocolate}	=> {pastry}	0.008032537	0.1618852	0.049618709	1
## [790]	{bottled beer, whole milk}	=> {yogurt}	0.005185562	0.2537313	0.020437214	1

## [791]	{margarine, ## rolls/buns}	=> {other vegetables}	0.005185562	0.3517241	0.014743264	1
## [792]	{onions, ## other vegetables}	=> {whole milk}	0.006609049	0.4642857	0.014234875	1
## [793]	{ham}	=> {other vegetables}	0.009150991	0.3515625	0.026029487	1
## [794]	{frankfurter}	=> {sausage}	0.010066090	0.1706897	0.058973055	1
## [795]	{sausage}	=> {frankfurter}	0.010066090	0.1071429	0.093950178	1
## [796]	{tropical fruit, ## whole milk}	=> {sausage}	0.007219115	0.1706731	0.042297916	1
## [797]	{other vegetables}	=> {domestic eggs}	0.022267412	0.1150815	0.193492628	1
## [798]	{domestic eggs}	=> {other vegetables}	0.022267412	0.3509615	0.063446873	1
## [799]	{frankfurter, ## other vegetables}	=> {whole milk}	0.007625826	0.4629630	0.016471784	1
## [800]	{rolls/buns, ## sausage}	=> {soda}	0.009659380	0.3156146	0.030604982	1
## [801]	{fruit/vegetable juice}	=> {tropical fruit}	0.013726487	0.1898734	0.072292832	1
## [802]	{tropical fruit}	=> {fruit/vegetable juice}	0.013726487	0.1308140	0.104931368	1
## [803]	{beef, ## root vegetables}	=> {whole milk}	0.008032537	0.4619883	0.017386884	1
## [804]	{meat}	=> {root vegetables}	0.005083884	0.1968504	0.025826131	1
## [805]	{napkins}	=> {domestic eggs}	0.005998983	0.1145631	0.052364006	1
## [806]	{frozen vegetables}	=> {margarine}	0.005083884	0.1057082	0.048093543	1
## [807]	{citrus fruit}	=> {other vegetables}	0.028876462	0.3488943	0.082765633	1
## [808]	{other vegetables}	=> {citrus fruit}	0.028876462	0.1492380	0.193492628	1
## [809]	{beef}	=> {domestic eggs}	0.005998983	0.1143411	0.052465684	1
## [810]	{domestic eggs}	=> {pip fruit}	0.008642603	0.1362179	0.063446873	1
## [811]	{pip fruit}	=> {domestic eggs}	0.008642603	0.1142473	0.075648195	1
## [812]	{newspapers, ## yogurt}	=> {rolls/buns}	0.005083884	0.3311258	0.015353330	1
## [813]	{soda, ## whole milk}	=> {other vegetables}	0.013929842	0.3477157	0.040061007	1
## [814]	{rolls/buns, ## whole milk}	=> {frankfurter}	0.005998983	0.1059246	0.056634469	1
## [815]	{root vegetables, ## whole milk}	=> {brown bread}	0.005693950	0.1164241	0.048906965	1
## [816]	{frozen vegetables}	=> {frankfurter}	0.005083884	0.1057082	0.048093543	1
## [817]	{soda, ## tropical fruit}	=> {other vegetables}	0.007219115	0.3463415	0.020843925	1
## [818]	{white bread}	=> {shopping bags}	0.007422471	0.1763285	0.042094560	1
## [819]	{cream cheese}	=> {other vegetables}	0.013726487	0.3461538	0.039654296	1
## [820]	{pip fruit}	=> {other vegetables}	0.026131164	0.3454301	0.075648195	1
## [821]	{other vegetables}	=> {pip fruit}	0.026131164	0.1350499	0.193492628	1
## [822]	{other vegetables, ## sausage}	=> {rolls/buns}	0.008845958	0.3283019	0.026944586	1
## [823]	{napkins, ## whole milk}	=> {other vegetables}	0.006812405	0.3453608	0.019725470	1
## [824]	{beef}	=> {whipped/sour cream}	0.006710727	0.1279070	0.052465684	1
## [825]	{white bread, ## whole milk}	=> {other vegetables}	0.005897306	0.3452381	0.017081851	1
## [826]	{hamburger meat, ## other vegetables}	=> {whole milk}	0.006304016	0.4558824	0.013828165	1
## [827]	{tropical fruit, ## whole milk}	=> {pastry}	0.006710727	0.1586538	0.042297916	1
## [828]	{soda,					

##	whole milk}	=> {sausage}	0.006710727	0.1675127	0.040061007	1
## [829]	{pastry,	=> {whole milk}	0.005693950	0.4552846	0.012506355	1
##	sausage}	=> {whole milk}	0.005693950	0.4552846	0.012506355	1
## [830]	{margarine,	=> {rolls/buns}	0.007930859	0.3277311	0.024199288	1
##	whole milk}	=> {fruit/vegetable juice}	0.014234875	0.1287948	0.110523640	1
## [831]	{bottled water}	=> {bottled water}	0.014234875	0.1969058	0.072292832	1
## [832]	{fruit/vegetable juice}	=> {rolls/buns}	0.005795628	0.3275862	0.017691917	1
## [833]	{pastry,	=> {sausage}	0.005998983	0.1671388	0.035892222	1
##	yogurt}	=> {other vegetables}	0.005388917	0.3441558	0.015658363	1
## [834]	{other vegetables,	=> {fruit/vegetable juice}	0.008337570	0.1285266	0.064870361	1
##	tropical fruit}	=> {brown bread}	0.008337570	0.1153305	0.072292832	1
## [835]	{sausage,	=> {shopping bags}	0.009049314	0.4540816	0.019928826	1
##	shopping bags}	=> {rolls/buns}	0.019217082	0.3258621	0.058973055	1
## [836]	{brown bread}	=> {frankfurter}	0.019217082	0.1044776	0.183934926	1
## [837]	{fruit/vegetable juice}	=> {rolls/buns}	0.015556685	0.4526627	0.034367056	1
## [838]	{citrus fruit,	=> {whole milk}	0.005897306	0.1576087	0.037417387	1
##	tropical fruit}	=> {pastry}				
## [842]	{long life bakery product}	=> {newspapers,				
## [843]		=> {whole milk}				
##		=> {tropical fruit}	0.005083884	0.1858736	0.027351296	1
## [844]	{sausage}	=> {rolls/buns}	0.030604982	0.3257576	0.093950178	1
## [845]	{rolls/buns}	=> {sausage}	0.030604982	0.1663903	0.183934926	1
## [846]	{bottled beer}	=> {bottled water}	0.015760041	0.1957071	0.080528724	1
## [847]	{bottled water}	=> {bottled beer}	0.015760041	0.1425943	0.110523640	1
## [848]	{napkins,	=> {whole milk}	0.005287239	0.4521739	0.011692933	1
##	rolls/buns}	=> {other vegetables}	0.006405694	0.3423913	0.018708693	1
## [849]	{coffee,	=> {whole milk}				
##	whole milk}	=> {butter,				
## [850]		=> {whole milk}	0.005388917	0.1955720	0.027554652	1
##		=> {bottled water}	0.035892222	0.3420543	0.104931368	1
## [851]	{tropical fruit}	=> {other vegetables}	0.035892222	0.1854966	0.193492628	1
## [852]	{other vegetables}	=> {tropical fruit}				
## [853]	{citrus fruit,	=> {whole milk}	0.013014743	0.4507042	0.028876462	1
##	other vegetables}	=> {frankfurter}	0.005083884	0.1039501	0.048906965	1
## [854]	{root vegetables,	=> {other vegetables}	0.005998983	0.3410405	0.017590239	1
##	whole milk}	=> {whole milk}	0.032231825	0.4496454	0.071682766	1
## [855]	{dishes}	=> {whipped/sour cream}	0.032231825	0.1261441	0.255516014	1
## [856]	{whipped/sour cream}	=> {whole milk}	0.007625826	0.1456311	0.052364006	1
## [857]	{whole milk}	=> {whipped/sour cream}				
## [858]	{napkins}	=> {citrus fruit}				
## [859]	{rolls/buns,	=> {sausage}	0.009354347	0.1651706	0.056634469	1
##	whole milk}	=> {other vegetables}	0.010167768	0.3401361	0.029893238	1
## [860]	{sausage,	=> {root vegetables}	0.048906965	0.1914047	0.255516014	1
##	whole milk}	=> {whole milk}	0.048906965	0.4486940	0.108998475	1
## [861]	{whole milk}	=> {sausage}	0.010676157	0.1645768	0.064870361	1
## [862]	{root vegetables}	=> {brown bread}	0.010676157	0.1136364	0.093950178	1
## [863]	{brown bread}	=> {sausage}				
## [864]	{sausage}	=> {brown bread}				
## [865]	{other vegetables,	=> {tropical fruit}	0.007829181	0.1837709	0.042602949	1
##	rolls/buns}					

## [866]	{fruit/vegetable juice}	=> {domestic eggs}	0.008032537	0.1111111	0.072292832	1
## [867]	{domestic eggs}	=> {fruit/vegetable juice}	0.008032537	0.1266026	0.063446873	1
## [868]	{onions}	=> {tropical fruit}	0.005693950	0.1836066	0.031011693	1
## [869]	{citrus fruit, whole milk}	=> {bottled water}	0.005897306	0.1933333	0.030503305	1
## [870]	{chocolate, whole milk}	=> {soda}	0.005083884	0.3048780	0.016675140	1
## [871]	{fruit/vegetable juice}	=> {pip fruit}	0.009557702	0.1322082	0.072292832	1
## [872]	{pip fruit}	=> {fruit/vegetable juice}	0.009557702	0.1263441	0.075648195	1
## [873]	{rolls/buns, tropical fruit}	=> {whole milk}	0.010981190	0.4462810	0.024605999	1
## [874]	{butter}	=> {pip fruit}	0.007320793	0.1321101	0.055414337	1
## [875]	{fruit/vegetable juice}	=> {whipped/sour cream}	0.009049314	0.1251758	0.072292832	1
## [876]	{whipped/sour cream}	=> {fruit/vegetable juice}	0.009049314	0.1262411	0.071682766	1
## [877]	{canned fish}	=> {other vegetables}	0.005083884	0.3378378	0.015048297	1
## [878]	{napkins}	=> {root vegetables}	0.009964413	0.1902913	0.052364006	1
## [879]	{sausage, yogurt}	=> {whole milk}	0.008744281	0.4455959	0.019623793	1
## [880]	{beef, whole milk}	=> {rolls/buns}	0.006812405	0.3205742	0.021250635	1
## [881]	{pip fruit, rolls/buns}	=> {whole milk}	0.006202339	0.4452555	0.013929842	1
## [882]	{yogurt}	=> {margarine}	0.014234875	0.1020408	0.139501779	1
## [883]	{margarine}	=> {yogurt}	0.014234875	0.2430556	0.058566345	1
## [884]	{cream cheese}	=> {root vegetables}	0.007524148	0.1897436	0.039654296	1
## [885]	{margarine}	=> {other vegetables}	0.019725470	0.3368056	0.058566345	1
## [886]	{other vegetables}	=> {margarine}	0.019725470	0.1019443	0.193492628	1
## [887]	{sugar}	=> {whole milk}	0.015048297	0.4444444	0.033858668	1
## [888]	{margarine}	=> {root vegetables}	0.011082867	0.1892361	0.058566345	1
## [889]	{root vegetables}	=> {margarine}	0.011082867	0.1016791	0.108998475	1
## [890]	{sugar}	=> {root vegetables}	0.006405694	0.1891892	0.033858668	1
## [891]	{hamburger meat}	=> {whole milk}	0.014743264	0.4434251	0.033248602	1
## [892]	{cream cheese}	=> {tropical fruit}	0.007219115	0.1820513	0.039654296	1
## [893]	{cream cheese}	=> {citrus fruit}	0.005693950	0.1435897	0.039654296	1
## [894]	{pork}	=> {frankfurter}	0.005897306	0.1022928	0.057651246	1
## [895]	{frankfurter}	=> {pork}	0.005897306	0.1000000	0.058973055	1
## [896]	{fruit/vegetable juice}	=> {citrus fruit}	0.010371124	0.1434599	0.072292832	1
## [897]	{citrus fruit}	=> {fruit/vegetable juice}	0.010371124	0.1253071	0.082765633	1
## [898]	{frozen vegetables}	=> {tropical fruit}	0.008744281	0.1818182	0.048093543	1
## [899]	{bottled water, tropical fruit}	=> {other vegetables}	0.006202339	0.3351648	0.018505338	1
## [900]	{newspapers, whole milk}	=> {yogurt}	0.006609049	0.2416357	0.027351296	1
## [901]	{white bread}	=> {root vegetables}	0.007930859	0.1884058	0.042094560	1
## [902]	{other vegetables, whole milk}	=> {frankfurter}	0.007625826	0.1019022	0.074834774	1
## [903]	{rolls/buns, yogurt}	=> {other vegetables}	0.011489578	0.3343195	0.034367056	1
## [904]	{ham}	=> {whole milk}	0.011489578	0.4414062	0.026029487	1
## [905]	{soda, whole milk}	=> {shopping bags}	0.006812405	0.1700508	0.040061007	1
## [906]	{soft cheese}	=> {whole milk}	0.007524148	0.4404762	0.017081851	1
## [907]	{detergent}	=> {other vegetables}	0.006405694	0.3333333	0.019217082	1
## [908]	{sugar}	=> {pastry}	0.005185562	0.1531532	0.033858668	1

## [909]	{sliced cheese}	=> {whole milk}	0.010777834	0.4398340	0.024504321	1
## [910]	{onions}	=> {bottled water}	0.005897306	0.1901639	0.031011693	1
## [911]	{tropical fruit, whole milk}	=> {bottled water}	0.008032537	0.1899038	0.042297916	1
## [912]	{candy}	=> {tropical fruit}	0.005388917	0.1802721	0.029893238	1
## [913]	{soda, yogurt}	=> {rolls/buns}	0.008642603	0.3159851	0.027351296	1
## [914]	{soft cheese}	=> {rolls/buns}	0.005388917	0.3154762	0.017081851	1
## [915]	{butter}	=> {tropical fruit}	0.009964413	0.1798165	0.055414337	1
## [916]	{margarine}	=> {brown bread}	0.006507372	0.1111111	0.058566345	1
## [917]	{brown bread}	=> {margarine}	0.006507372	0.1003135	0.064870361	1
## [918]	{processed cheese}	=> {other vegetables}	0.005490595	0.3312883	0.016573462	1
## [919]	{hamburger meat}	=> {root vegetables}	0.006202339	0.1865443	0.033248602	1
## [920]	{other vegetables, yogurt}	=> {pastry}	0.006609049	0.1522248	0.043416370	1
## [921]	{root vegetables, soda}	=> {whole milk}	0.008134215	0.4371585	0.018607016	1
## [922]	{domestic eggs}	=> {tropical fruit}	0.011387900	0.1794872	0.063446873	1
## [923]	{tropical fruit}	=> {domestic eggs}	0.011387900	0.1085271	0.104931368	1
## [924]	{fruit/vegetable juice, tropical fruit}	=> {whole milk}	0.005998983	0.4370370	0.013726487	1
## [925]	{other vegetables, sausage}	=> {bottled water}	0.005083884	0.1886792	0.026944586	1
## [926]	{bottled water, citrus fruit}	=> {whole milk}	0.005897306	0.4360902	0.013523132	1
## [927]	{pip fruit}	=> {whipped/sour cream}	0.009252669	0.1223118	0.075648195	1
## [928]	{whipped/sour cream}	=> {pip fruit}	0.009252669	0.1290780	0.071682766	1
## [929]	{pip fruit}	=> {yogurt}	0.017996950	0.2379032	0.075648195	1
## [930]	{yogurt}	=> {pip fruit}	0.017996950	0.1290087	0.139501779	1
## [931]	{bottled water, soda}	=> {tropical fruit}	0.005185562	0.1789474	0.028978139	1
## [932]	{chocolate, whole milk}	=> {other vegetables}	0.005490595	0.3292683	0.016675140	1
## [933]	{other vegetables, rolls/buns}	=> {citrus fruit}	0.005998983	0.1408115	0.042602949	1
## [934]	{sausage, whole milk}	=> {rolls/buns}	0.009354347	0.3129252	0.029893238	1
## [935]	{bottled water, other vegetables}	=> {whole milk}	0.010777834	0.4344262	0.024809354	1
## [936]	{frozen vegetables}	=> {domestic eggs}	0.005185562	0.1078224	0.048093543	1
## [937]	{soda, whole milk}	=> {bottled water}	0.007524148	0.1878173	0.040061007	1
## [938]	{bottled water, tropical fruit}	=> {whole milk}	0.008032537	0.4340659	0.018505338	1
## [939]	{root vegetables}	=> {yogurt}	0.025826131	0.2369403	0.108998475	1
## [940]	{yogurt}	=> {root vegetables}	0.025826131	0.1851312	0.139501779	1
## [941]	{dessert}	=> {shopping bags}	0.006202339	0.1671233	0.037112354	1
## [942]	{other vegetables, yogurt}	=> {bottled water}	0.008134215	0.1873536	0.043416370	1
## [943]	{rolls/buns, whole milk}	=> {pastry}	0.008540925	0.1508079	0.056634469	1
## [944]	{napkins}	=> {pip fruit}	0.006710727	0.1281553	0.052364006	1
## [945]	{sliced cheese}	=> {rolls/buns}	0.007625826	0.3112033	0.024504321	1
## [946]	{shopping bags}	=> {sausage}	0.015658363	0.1589267	0.098525674	1

## [947]	{sausage}	=> {shopping bags}	0.015658363	0.1666667	0.093950178	1
## [948]	{mustard}	=> {whole milk}	0.005185562	0.4322034	0.011997966	1
## [949]	{dessert}	=> {sausage}	0.005897306	0.1589041	0.037112354	1
## [950]	{chocolate, other vegetables}	=> {whole milk}	0.005490595	0.4320000	0.012709710	1
## [951]	{newspapers, other vegetables}	=> {whole milk}	0.008337570	0.4315789	0.019318760	1
## [952]	{rolls/buns, whole milk}	=> {newspapers}	0.007625826	0.1346499	0.056634469	1
## [953]	{newspapers, tropical fruit}	=> {whole milk}	0.005083884	0.4310345	0.011794611	1
## [954]	{misc. beverages}	=> {bottled water}	0.005287239	0.1863799	0.028368073	1
## [955]	{white bread}	=> {other vegetables}	0.013726487	0.3260870	0.042094560	1
## [956]	{newspapers, yogurt}	=> {whole milk}	0.006609049	0.4304636	0.015353330	1
## [957]	{napkins}	=> {yogurt}	0.012302999	0.2349515	0.052364006	1
## [958]	{citrus fruit, rolls/buns}	=> {whole milk}	0.007219115	0.4303030	0.016776817	1
## [959]	{bottled water, yogurt}	=> {rolls/buns}	0.007117438	0.3097345	0.022979156	1
## [960]	{root vegetables, whole milk}	=> {sausage}	0.007727504	0.1580042	0.048906965	1
## [961]	{other vegetables, white bread}	=> {whole milk}	0.005897306	0.4296296	0.013726487	1
## [962]	{whipped/sour cream, whole milk}	=> {sausage}	0.005083884	0.1577287	0.032231825	1
## [963]	{long life bakery product}	=> {yogurt}	0.008744281	0.2336957	0.037417387	1
## [964]	{brown bread}	=> {pastry}	0.009659380	0.1489028	0.064870361	1
## [965]	{pastry}	=> {brown bread}	0.009659380	0.1085714	0.088967972	1
## [966]	{other vegetables, soda}	=> {shopping bags}	0.005388917	0.1645963	0.032740214	1
## [967]	{rolls/buns, soda}	=> {shopping bags}	0.006304016	0.1644562	0.038332486	1
## [968]	{onions}	=> {yogurt}	0.007219115	0.2327869	0.031011693	1
## [969]	{butter milk}	=> {root vegetables}	0.005083884	0.1818182	0.027961362	1
## [970]	{curd}	=> {other vegetables}	0.017183528	0.3225191	0.053279105	1
## [971]	{other vegetables, shopping bags}	=> {yogurt}	0.005388917	0.2324561	0.023182511	1
## [972]	{other vegetables, soda}	=> {whole milk}	0.013929842	0.4254658	0.032740214	1
## [973]	{chocolate}	=> {shopping bags}	0.008134215	0.1639344	0.049618709	1
## [974]	{frozen vegetables}	=> {whole milk}	0.020437214	0.4249471	0.048093543	1
## [975]	{sausage, yogurt}	=> {rolls/buns}	0.005998983	0.3056995	0.019623793	1
## [976]	{whole milk, yogurt}	=> {sausage}	0.008744281	0.1560799	0.056024403	1
## [977]	{frozen vegetables}	=> {citrus fruit}	0.006609049	0.1374207	0.048093543	1
## [978]	{hamburger meat}	=> {sausage}	0.005185562	0.1559633	0.033248602	1
## [979]	{butter}	=> {sausage}	0.008642603	0.1559633	0.055414337	1
## [980]	{candy}	=> {soda}	0.008642603	0.2891156	0.029893238	1
## [981]	{processed cheese}	=> {whole milk}	0.007015760	0.4233129	0.016573462	1
## [982]	{cake bar}	=> {whole milk}	0.005592272	0.4230769	0.013218099	1
## [983]	{brown bread}	=> {domestic eggs}	0.006812405	0.1050157	0.064870361	1
## [984]	{domestic eggs}	=> {brown bread}	0.006812405	0.1073718	0.063446873	1

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## [985] {domestic eggs,
##       rolls/buns} => {whole milk} 0.006609049 0.4220779 0.015658363 1
## [986] {sausage,
##       soda} => {yogurt} 0.005592272 0.2301255 0.024300966 1
## [987] {sugar} => {other vegetables} 0.010777834 0.3183183 0.033858668 1
## [988] {bottled water,
##       yogurt} => {whole milk} 0.009659380 0.4203540 0.022979156 1
## [989] {rolls/buns,
##       tropical fruit} => {other vegetables} 0.007829181 0.3181818 0.024605999 1
## [990] {other vegetables,
##       rolls/buns} => {whole milk} 0.017895272 0.4200477 0.042602949 1
## [991] {pastry,
##       whole milk} => {other vegetables} 0.010574479 0.3180428 0.033248602 1
## [992] {brown bread,
##       rolls/buns} => {whole milk} 0.005287239 0.4193548 0.012608033 1
## [993] {other vegetables,
##       soda} => {rolls/buns} 0.009862735 0.3012422 0.032740214 1
## [994] {margarine} => {citrus fruit} 0.007930859 0.1354167 0.058566345 1
## [995] {domestic eggs,
##       soda} => {whole milk} 0.005185562 0.4180328 0.012404677 1
## [996] {coffee} => {shopping bags} 0.009354347 0.1611208 0.058057956 1
## [997] {sausage,
##       yogurt} => {soda} 0.005592272 0.2849741 0.019623793 1
## [998] {chicken,
##       whole milk} => {rolls/buns} 0.005287239 0.3005780 0.017590239 1
## [999] {rolls/buns,
##       whole milk} => {other vegetables} 0.017895272 0.3159785 0.056634469 1
## [1000] {dessert} => {pastry} 0.005388917 0.1452055 0.037112354 1
## [1001] {cream cheese} => {whole milk} 0.016471784 0.4153846 0.039654296 1
## [1002] {chocolate} => {pip fruit} 0.006100661 0.1229508 0.049618709 1
## [1003] {tropical fruit,
##       yogurt} => {rolls/buns} 0.008744281 0.2986111 0.029283172 1
## [1004] {margarine} => {whipped/sour cream} 0.006812405 0.1163194 0.058566345 1
## [1005] {butter milk} => {whole milk} 0.011591256 0.4145455 0.027961362 1
## [1006] {bottled water,
##       whole milk} => {other vegetables} 0.010777834 0.3136095 0.034367056 1
## [1007] {domestic eggs} => {yogurt} 0.014336553 0.2259615 0.063446873 1
## [1008] {yogurt} => {domestic eggs} 0.014336553 0.1027697 0.139501779 1
## [1009] {dessert} => {tropical fruit} 0.006304016 0.1698630 0.037112354 1
## [1010] {frankfurter} => {pip fruit} 0.007219115 0.1224138 0.058973055 1
## [1011] {margarine} => {whole milk} 0.024199288 0.4131944 0.058566345 1
## [1012] {rolls/buns,
##       soda} => {yogurt} 0.008642603 0.2254642 0.038332486 1
## [1013] {pip fruit,
##       tropical fruit} => {whole milk} 0.008439248 0.4129353 0.020437214 1
## [1014] {root vegetables,
##       shopping bags} => {whole milk} 0.005287239 0.4126984 0.012811388 1
## [1015] {other vegetables,
##       rolls/buns} => {newspapers} 0.005490595 0.1288783 0.042602949 1
## [1016] {bottled water,
##       rolls/buns} => {soda} 0.006812405 0.2815126 0.024199288 1
## [1017] {dessert} => {other vegetables} 0.011591256 0.3123288 0.037112354 1
## [1018] {curd} => {citrus fruit} 0.007117438 0.1335878 0.053279105 1
## [1019] {other vegetables,

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## yogurt}	=> {newspapers}	0.005592272	0.1288056	0.043416370	1
## [1020] {butter}	=> {brown bread}	0.005795628	0.1045872	0.055414337	1
## [1021] {salty snack}	=> {shopping bags}	0.005998983	0.1586022	0.037824098	1
## [1022] {other vegetables,					
## rolls/buns}	=> {pastry}	0.006100661	0.1431981	0.042602949	1
## [1023] {yogurt}	=> {other vegetables}	0.043416370	0.3112245	0.139501779	1
## [1024] {other vegetables}	=> {yogurt}	0.043416370	0.2243826	0.193492628	1
## [1025] {shopping bags,					
## whole milk}	=> {other vegetables}	0.007625826	0.3112033	0.024504321	1
## [1026] {rolls/buns,					
## soda}	=> {bottled water}	0.006812405	0.1777188	0.038332486	1
## [1027] {hard cheese}	=> {whole milk}	0.010066090	0.4107884	0.024504321	1
## [1028] {bottled water,					
## tropical fruit}	=> {soda}	0.005185562	0.2802198	0.018505338	1
## [1029] {yogurt}	=> {brown bread}	0.014539908	0.1042274	0.139501779	1
## [1030] {brown bread}	=> {yogurt}	0.014539908	0.2241379	0.064870361	1
## [1031] {long life bakery product}	=> {tropical fruit}	0.006304016	0.1684783	0.037417387	1
## [1032] {chicken}	=> {whole milk}	0.017590239	0.4099526	0.042907982	1
## [1033] {bottled water,					
## other vegetables}	=> {rolls/buns}	0.007320793	0.2950820	0.024809354	1
## [1034] {domestic eggs}	=> {sausage}	0.009557702	0.1506410	0.063446873	1
## [1035] {sausage}	=> {domestic eggs}	0.009557702	0.1017316	0.093950178	1
## [1036] {domestic eggs}	=> {pastry}	0.009049314	0.1426282	0.063446873	1
## [1037] {pastry}	=> {domestic eggs}	0.009049314	0.1017143	0.088967972	1
## [1038] {hygiene articles}	=> {shopping bags}	0.005185562	0.1574074	0.032943569	1
## [1039] {beef}	=> {yogurt}	0.011692933	0.2228682	0.052465684	1
## [1040] {beef,					
## other vegetables}	=> {rolls/buns}	0.005795628	0.2938144	0.019725470	1
## [1041] {berries}	=> {other vegetables}	0.010269446	0.3088685	0.033248602	1
## [1042] {pastry,					
## rolls/buns}	=> {whole milk}	0.008540925	0.4077670	0.020945602	1
## [1043] {tropical fruit}	=> {bottled water}	0.018505338	0.1763566	0.104931368	1
## [1044] {bottled water}	=> {tropical fruit}	0.018505338	0.1674333	0.110523640	1
## [1045] {shopping bags,					
## whole milk}	=> {soda}	0.006812405	0.2780083	0.024504321	1
## [1046] {bottled water,					
## fruit/vegetable juice}	=> {whole milk}	0.005795628	0.4071429	0.014234875	1
## [1047] {hygiene articles}	=> {yogurt}	0.007320793	0.2222222	0.032943569	1
## [1048] {citrus fruit,					
## other vegetables}	=> {bottled water}	0.005083884	0.1760563	0.028876462	1
## [1049] {other vegetables,					
## tropical fruit}	=> {pastry}	0.005083884	0.1416431	0.035892222	1
## [1050] {UHT-milk}	=> {yogurt}	0.007422471	0.2218845	0.033451957	1
## [1051] {frankfurter}	=> {pastry}	0.008337570	0.1413793	0.058973055	1
## [1052] {other vegetables,					
## whole milk}	=> {pastry}	0.010574479	0.1413043	0.074834774	1
## [1053] {white bread}	=> {whole milk}	0.017081851	0.4057971	0.042094560	1
## [1054] {frankfurter,					
## whole milk}	=> {rolls/buns}	0.005998983	0.2920792	0.020538892	1
## [1055] {curd}	=> {pastry}	0.007524148	0.1412214	0.053279105	1
## [1056] {pasta}	=> {whole milk}	0.006100661	0.4054054	0.015048297	1
## [1057] {margarine}	=> {bottled water}	0.010269446	0.1753472	0.058566345	1
## [1058] {pip fruit}	=> {pastry}	0.010676157	0.1411290	0.075648195	1
## [1059] {pastry}	=> {pip fruit}	0.010676157	0.1200000	0.088967972	1

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## [1060] {other vegetables,
##         root vegetables} => {newspapers} 0.005998983 0.1266094 0.047381800 1
## [1061] {beef} => {whole milk} 0.021250635 0.4050388 0.052465684 1
## [1062] {bottled water,
##         tropical fruit} => {rolls/buns} 0.005388917 0.2912088 0.018505338 1
## [1063] {frankfurter} => {root vegetables} 0.010167768 0.1724138 0.058973055 1
## [1064] {rolls/buns,
##         soda} => {pastry} 0.005388917 0.1405836 0.038332486 1
## [1065] {brown bread,
##         soda} => {whole milk} 0.005083884 0.4032258 0.012608033 1
## [1066] {waffles} => {root vegetables} 0.006609049 0.1719577 0.038434164 1
## [1067] {tropical fruit} => {whole milk} 0.042297916 0.4031008 0.104931368 1
## [1068] {whole milk} => {tropical fruit} 0.042297916 0.1655392 0.255516014 1
## [1069] {other vegetables,
##         rolls/buns} => {pip fruit} 0.005083884 0.1193317 0.042602949 1
## [1070] {newspapers,
##         whole milk} => {other vegetables} 0.008337570 0.3048327 0.027351296 1
## [1071] {soda,
##         yogurt} => {other vegetables} 0.008337570 0.3048327 0.027351296 1
## [1072] {semi-finished bread} => {whole milk} 0.007117438 0.4022989 0.017691917 1
## [1073] {coffee} => {pip fruit} 0.006914082 0.1190893 0.058057956 1
## [1074] {oil} => {whole milk} 0.011286223 0.4021739 0.028063040 1
## [1075] {other vegetables,
##         soda} => {bottled water} 0.005693950 0.1739130 0.032740214 1
## [1076] {yogurt} => {whole milk} 0.056024403 0.4016035 0.139501779 1
## [1077] {whole milk} => {yogurt} 0.056024403 0.2192598 0.255516014 1
## [1078] {pastry,
##         whole milk} => {root vegetables} 0.005693950 0.1712538 0.033248602 1
## [1079] {brown bread} => {tropical fruit} 0.010676157 0.1645768 0.064870361 1
## [1080] {tropical fruit} => {brown bread} 0.010676157 0.1017442 0.104931368 1
## [1081] {frozen meals} => {yogurt} 0.006202339 0.2186380 0.028368073 1
## [1082] {pot plants} => {whole milk} 0.006914082 0.4000000 0.017285206 1
## [1083] {hygiene articles} => {bottled water} 0.005693950 0.1728395 0.032943569 1
## [1084] {other vegetables,
##         tropical fruit} => {bottled water} 0.006202339 0.1728045 0.035892222 1
## [1085] {bottled water,
##         rolls/buns} => {other vegetables} 0.007320793 0.3025210 0.024199288 1
## [1086] {chocolate} => {soda} 0.013523132 0.2725410 0.049618709 1
## [1087] {chocolate} => {tropical fruit} 0.008134215 0.1639344 0.049618709 1
## [1088] {whole milk,
##         yogurt} => {bottled water} 0.009659380 0.1724138 0.056024403 1
## [1089] {chocolate} => {citrus fruit} 0.006405694 0.1290984 0.049618709 1
## [1090] {fruit/vegetable juice,
##         yogurt} => {soda} 0.005083884 0.2717391 0.018708693 1
## [1091] {pip fruit} => {whole milk} 0.030096594 0.3978495 0.075648195 1
## [1092] {whole milk} => {pip fruit} 0.030096594 0.1177875 0.255516014 1
## [1093] {pickled vegetables} => {whole milk} 0.007117438 0.3977273 0.017895272 1
## [1094] {other vegetables,
##         rolls/buns} => {bottled water} 0.007320793 0.1718377 0.042602949 1
## [1095] {brown bread} => {pip fruit} 0.007625826 0.1175549 0.064870361 1
## [1096] {pip fruit} => {brown bread} 0.007625826 0.1008065 0.075648195 1
## [1097] {brown bread} => {citrus fruit} 0.008337570 0.1285266 0.064870361 1
## [1098] {citrus fruit} => {brown bread} 0.008337570 0.1007371 0.082765633 1
## [1099] {bottled beer,

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##      rolls/buns}          => {whole milk}          0.005388917  0.3955224  0.013624809 1
## [1100] {butter}           => {pastry}            0.007625826  0.1376147  0.055414337 1
## [1101] {shopping bags,   => {yogurt}            0.005287239  0.2157676  0.024504321 1
##      whole milk}          => {rolls/buns}         0.005693950  0.2842640  0.020030503 1
## [1102] {butter,           => {rolls/buns}         0.005490595  0.2842105  0.019318760 1
##      other vegetables}    => {yogurt}             0.009049314  0.2149758  0.042094560 1
## [1103] {newspapers,       => {pastry}            0.005185562  0.1370968  0.037824098 1
##      other vegetables}    => {rolls/buns}         0.005490595  0.2842105  0.019318760 1
## [1104] {white bread}      => {yogurt}             0.009049314  0.2149758  0.042094560 1
## [1105] {salty snack}     => {pastry}            0.005185562  0.1370968  0.037824098 1
## [1106] {rolls/buns,       => {citrus fruit}        0.007219115  0.1274686  0.056634469 1
##      whole milk}          => {soda}               0.007219115  0.2679245  0.026944586 1
## [1107] {other vegetables,=> {sausage}            0.007219115  0.2970711  0.024300966 1
##      sausage}              => {other vegetables} 0.005388917  0.1440217  0.037417387 1
## [1108] {sausage,          => {pastry}            0.008235892  0.3913043  0.021047280 1
##      soda}                 => {whole milk}         0.006812405  0.1437768  0.047381800 1
## [1109] {long life bakery product} => {sausage}            0.006405694  0.1220930  0.052465684 1
## [1110] {pastry,           => {whole milk}         0.009456024  0.1603448  0.058973055 1
##      soda}                 => {sausage}            0.012099644  0.3901639  0.031011693 1
## [1111] {other vegetables,=> {tropical fruit}       0.009862735  0.2657534  0.037112354 1
##      root vegetables}     => {whole milk}         0.007625826  0.1431298  0.053279105 1
## [1112] {beef}              => {newspapers}          0.005897306  0.2801932  0.021047280 1
## [1113] {frankfurter}      => {fruit/vegetable juice} 0.011997966  0.1659634  0.072292832 1
## [1114] {onions}            => {fruit/vegetable juice} 0.011997966  0.1100746  0.108998475 1
## [1115] {dessert}           => {newspapers}          0.007117438  0.1215278  0.058566345 1
## [1116] {curd}              => {tropical fruit}       0.009354347  0.1597222  0.058566345 1
## [1117] {root vegetables,  => {whole milk}          0.012811388  0.3888889  0.032943569 1
##      tropical fruit}       => {whole milk}          0.025216065  0.3887147  0.064870361 1
## [1118] {fruit/vegetable juice}=> {sausage}            0.006202339  0.2798165  0.022165735 1
## [1119] {root vegetables}  => {rolls/buns}         0.007219115  0.2795276  0.025826131 1
## [1120] {margarine}         => {rolls/buns}         0.010777834  0.1424731  0.075648195 1
## [1121] {margarine}         => {sausage}             0.010777834  0.1147186  0.093950178 1
## [1122] {hygiene articles}=> {pip fruit}            0.007625826  0.2788104  0.027351296 1
## [1123] {brown bread}       => {pip fruit}            0.006100661  0.3870968  0.015760041 1
## [1124] {pork,              => {whole milk}          0.005185562  0.2931034  0.017691917 1
##      whole milk}           => {whole milk}          0.005185562  0.1208531  0.042907982 1
## [1125] {root vegetables,  => {rolls/buns}         0.0074834774  0.3867578  0.193492628 1
##      yogurt}               => {whole milk}          0.0074834774  0.2928770  0.255516014 1
## [1126] {pip fruit}         => {other vegetables}  0.007219115  0.2639405  0.027351296 1
## [1127] {sausage}            => {rolls/buns}         0.007625826  0.3865979  0.019725470 1
## [1128] {newspapers,         => {whole milk}          0.006100661  0.1587302  0.038434164 1
##      whole milk}            => {tropical fruit}       0.005490595  0.2109375  0.026029487 1
## [1129] {bottled beer,       => {yogurt}              0.009964413  0.3858268  0.025826131 1
##      bottled water}         => {whole milk}          0.005185562  0.2931034  0.017691917 1
## [1130] {semi-finished bread}=> {whole milk}          0.005185562  0.1208531  0.042907982 1
## [1131] {chicken}             => {other vegetables}  0.0074834774  0.3867578  0.193492628 1
## [1132] {other vegetables}  => {whole milk}          0.0074834774  0.2928770  0.255516014 1
## [1133] {whole milk}          => {other vegetables}  0.007219115  0.2639405  0.027351296 1
## [1134] {specialty bar}      => {soda}                0.007625826  0.3865979  0.019725470 1
## [1135] {newspapers,         => {whole milk}          0.006100661  0.1587302  0.038434164 1
##      rolls/buns}            => {tropical fruit}       0.005490595  0.2109375  0.026029487 1
## [1136] {waffles}             => {yogurt}              0.009964413  0.3858268  0.025826131 1
## [1137] {beverages}           => {whole milk}          0.005185562  0.2931034  0.017691917 1
## [1138] {meat}                 => {whole milk}          0.005185562  0.1208531  0.042907982 1

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## [1139] {whole milk,
##         yogurt}                => {rolls/buns}          0.015556685 0.2776770 0.056024403 1
## [1140] {napkins}              => {pastry}               0.007015760 0.1339806 0.052364006 1
## [1141] {tropical fruit,
##         whole milk}            => {newspapers}           0.005083884 0.1201923 0.042297916 1
## [1142] {pastry,
##         rolls/buns}             => {other vegetables}  0.006100661 0.2912621 0.020945602 1
## [1143] {fruit/vegetable juice,
##         rolls/buns}             => {whole milk}          0.005592272 0.3846154 0.014539908 1
## [1144] {pork}                 => {whole milk}          0.022165735 0.3844797 0.057651246 1
## [1145] {fruit/vegetable juice} => {other vegetables}  0.021047280 0.2911392 0.072292832 1
## [1146] {other vegetables}    => {fruit/vegetable juice} 0.021047280 0.1087756 0.193492628 1
## [1147] {frankfurter,
##         rolls/buns}             => {other vegetables}  0.005592272 0.2910053 0.019217082 1
## [1148] {bottled water}        => {soda}                0.028978139 0.2621895 0.110523640 1
## [1149] {soda}                 => {bottled water}        0.028978139 0.1661808 0.174377224 1
## [1150] {cream cheese}        => {sausage}             0.005592272 0.1410256 0.039654296 1
## [1151] {hygiene articles}   => {root vegetables}    0.005388917 0.1635802 0.032943569 1
## [1152] {hygiene articles}   => {other vegetables}  0.009557702 0.2901235 0.032943569 1
## [1153] {fruit/vegetable juice}=> {shopping bags}     0.010676157 0.1476793 0.072292832 1
## [1154] {shopping bags}       => {fruit/vegetable juice} 0.010676157 0.1083591 0.098525674 1
## [1155] {soda,
##         yogurt}                => {whole milk}          0.010472801 0.3828996 0.027351296 1
## [1156] {sausage}              => {yogurt}              0.019623793 0.2088745 0.093950178 1
## [1157] {yogurt}               => {sausage}             0.019623793 0.1406706 0.139501779 1
## [1158] {pastry}               => {sausage}             0.012506355 0.1405714 0.088967972 1
## [1159] {sausage}              => {pastry}              0.012506355 0.1331169 0.093950178 1
## [1160] {rolls/buns,
##         sausage}                => {other vegetables}  0.008845958 0.2890365 0.030604982 1
## [1161] {napkins}              => {bottled water}        0.008642603 0.1650485 0.052364006 1
## [1162] {white bread}          => {pastry}              0.005592272 0.1328502 0.042094560 1
## [1163] {brown bread}          => {other vegetables}  0.018708693 0.2884013 0.064870361 1
## [1164] {yogurt}                => {bottled water}        0.022979156 0.1647230 0.139501779 1
## [1165] {bottled water}         => {yogurt}              0.022979156 0.2079117 0.110523640 1
## [1166] {shopping bags}        => {canned beer}         0.011387900 0.1155831 0.098525674 1
## [1167] {canned beer}          => {shopping bags}      0.011387900 0.1465969 0.077681749 1
## [1168] {salty snack}          => {sausage}             0.005287239 0.1397849 0.037824098 1
## [1169] {cat food}              => {whole milk}          0.008845958 0.3799127 0.023284189 1
## [1170] {root vegetables,
##         whole milk}             => {newspapers}           0.005795628 0.1185031 0.048906965 1
## [1171] {napkins}              => {newspapers}           0.006202339 0.1184466 0.052364006 1
## [1172] {sausage}               => {soda}                0.024300966 0.2586580 0.093950178 1
## [1173] {soda}                  => {sausage}             0.024300966 0.1393586 0.174377224 1
## [1174] {butter milk}           => {rolls/buns}          0.007625826 0.2727273 0.027961362 1
## [1175] {sausage}               => {other vegetables}  0.026944586 0.2867965 0.093950178 1
## [1176] {other vegetables}    => {sausage}             0.026944586 0.1392538 0.193492628 1
## [1177] {sausage}               => {fruit/vegetable juice} 0.010066090 0.1071429 0.093950178 1
## [1178] {fruit/vegetable juice}=> {sausage}             0.010066090 0.1392405 0.072292832 1
## [1179] {misc. beverages}      => {soda}                0.007320793 0.2580645 0.028368073 1
## [1180] {citrus fruit}          => {bottled water}        0.013523132 0.1633907 0.082765633 1
## [1181] {bottled water}         => {citrus fruit}        0.013523132 0.1223551 0.110523640 1
## [1182] {whole milk,
##         yogurt}                => {newspapers}           0.006609049 0.1179673 0.056024403 1
## [1183] {other vegetables,

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##	{sausage}	=> {whole milk}	0.010167768	0.3773585	0.026944586	1
## [1184]	{pastry, rolls/buns}	=> {soda}	0.005388917	0.2572816	0.020945602	1
## [1185]	{long life bakery product}	=> {other vegetables}	0.010676157	0.2853261	0.037417387	1
## [1186]	{napkins}	=> {whole milk}	0.019725470	0.3766990	0.052364006	1
## [1187]	{brown bread}	=> {newspapers}	0.007625826	0.1175549	0.064870361	1
## [1188]	{salty snack}	=> {other vegetables}	0.010777834	0.2849462	0.037824098	1
## [1189]	{chocolate, soda}	=> {whole milk}	0.005083884	0.3759398	0.013523132	1
## [1190]	{soda, tropical fruit}	=> {whole milk}	0.007829181	0.3756098	0.020843925	1
## [1191]	{other vegetables, pastry}	=> {rolls/buns}	0.006100661	0.2702703	0.022572445	1
## [1192]	{chewing gum}	=> {soda}	0.005388917	0.2560386	0.021047280	1
## [1193]	{citrus fruit, pip fruit}	=> {whole milk}	0.005185562	0.3750000	0.013828165	1
## [1194]	{meat}	=> {yogurt}	0.005287239	0.2047244	0.025826131	1
## [1195]	{frankfurter}	=> {whipped/sour cream}	0.006202339	0.1051724	0.058973055	1
## [1196]	{coffee}	=> {whipped/sour cream}	0.006100661	0.1050788	0.058057956	1
## [1197]	{margarine}	=> {fruit/vegetable juice}	0.006202339	0.1059028	0.058566345	1
## [1198]	{other vegetables, whole milk, yogurt}	=> {rolls/buns}	0.005998983	0.2694064	0.022267412	1
## [1199]	{sugar}	=> {yogurt}	0.006914082	0.2042042	0.033858668	1
## [1200]	{pastry}	=> {whole milk}	0.033248602	0.3737143	0.088967972	1
## [1201]	{whole milk}	=> {pastry}	0.033248602	0.1301234	0.255516014	1
## [1202]	{long life bakery product}	=> {shopping bags}	0.005388917	0.1440217	0.037417387	1
## [1203]	{butter}	=> {bottled water}	0.008947636	0.1614679	0.055414337	1
## [1204]	{fruit/vegetable juice}	=> {soda}	0.018403660	0.2545710	0.072292832	1
## [1205]	{soda}	=> {fruit/vegetable juice}	0.018403660	0.1055394	0.174377224	1
## [1206]	{sausage}	=> {root vegetables}	0.014946619	0.1590909	0.093950178	1
## [1207]	{root vegetables}	=> {sausage}	0.014946619	0.1371269	0.108998475	1
## [1208]	{napkins, whole milk}	=> {rolls/buns}	0.005287239	0.2680412	0.019725470	1
## [1209]	{meat}	=> {rolls/buns}	0.006914082	0.2677165	0.025826131	1
## [1210]	{citrus fruit, yogurt}	=> {rolls/buns}	0.005795628	0.2676056	0.021657346	1
## [1211]	{other vegetables, root vegetables, whole milk}	=> {rolls/buns}	0.006202339	0.2675439	0.023182511	1
## [1212]	{sausage}	=> {citrus fruit}	0.011286223	0.1201299	0.093950178	1
## [1213]	{citrus fruit}	=> {sausage}	0.011286223	0.1363636	0.082765633	1
## [1214]	{waffles}	=> {shopping bags}	0.005490595	0.1428571	0.038434164	1
## [1215]	{rolls/buns, whole milk}	=> {pip fruit}	0.006202339	0.1095153	0.056634469	1
## [1216]	{brown bread}	=> {shopping bags}	0.009252669	0.1426332	0.064870361	1
## [1217]	{domestic eggs}	=> {shopping bags}	0.009049314	0.1426282	0.063446873	1
## [1218]	{dessert}	=> {whole milk}	0.013726487	0.3698630	0.037112354	1
## [1219]	{other vegetables, whole milk}	=> {sausage}	0.010167768	0.1358696	0.074834774	1
## [1220]	{cat food}	=> {other vegetables}	0.006507372	0.2794760	0.023284189	1
## [1221]	{ham}	=> {rolls/buns}	0.006914082	0.2656250	0.026029487	1
## [1222]	{frankfurter}	=> {other vegetables}	0.016471784	0.2793103	0.058973055	1
## [1223]	{citrus fruit}	=> {whole milk}	0.030503305	0.3685504	0.082765633	1

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## [1224] {whole milk}          => {citrus fruit}          0.030503305 0.1193792 0.255516014 1
## [1225] {fruit/vegetable juice} => {whole milk}          0.026639553 0.3684951 0.072292832 1
## [1226] {whole milk}          => {fruit/vegetable juice} 0.026639553 0.1042579 0.255516014 1
## [1227] {rolls/buns, yogurt}   => {soda}                0.008642603 0.2514793 0.034367056 1
## [1228] {domestic eggs, other vegetables} => {rolls/buns} 0.005897306 0.2648402 0.022267412 1
## [1229] {other vegetables, yogurt}           => {rolls/buns} 0.011489578 0.2646370 0.043416370 1
## [1230] {newspapers, rolls/buns}             => {other vegetables} 0.005490595 0.2783505 0.019725470 1
## [1231] {brown bread}                     => {root vegetables} 0.010167768 0.1567398 0.064870361 1
## [1232] {pork}                          => {newspapers}        0.006609049 0.1146384 0.057651246 1
## [1233] {bottled beer, whole milk}        => {rolls/buns}        0.005388917 0.2636816 0.020437214 1
## [1234] {dessert}                      => {root vegetables} 0.005795628 0.1561644 0.037112354 1
## [1235] {shopping bags}                => {soda}              0.024605999 0.2497420 0.098525674 1
## [1236] {soda}                         => {shopping bags} 0.024605999 0.1411079 0.174377224 1
## [1237] {cream cheese}                 => {shopping bags} 0.005592272 0.1410256 0.039654296 1
## [1238] {coffee}                      => {fruit/vegetable juice} 0.005998983 0.1033275 0.058057956 1
## [1239] {margarine, other vegetables}   => {rolls/buns}        0.005185562 0.2628866 0.019725470 1
## [1240] {newspapers}                   => {fruit/vegetable juice} 0.008235892 0.1031847 0.079816980 1
## [1241] {fruit/vegetable juice}        => {newspapers}        0.008235892 0.1139241 0.072292832 1
## [1242] {waffles}                     => {soda}              0.009557702 0.2486772 0.038434164 1
## [1243] {yogurt}                      => {pastry}            0.017691917 0.1268222 0.139501779 1
## [1244] {pastry}                      => {yogurt}            0.017691917 0.1988571 0.088967972 1
## [1245] {napkins}                     => {other vegetables} 0.014438231 0.2757282 0.052364006 1
## [1246] {chicken}                     => {tropical fruit} 0.006405694 0.1492891 0.042907982 1
## [1247] {pastry, whole milk}          => {soda}              0.008235892 0.2477064 0.033248602 1
## [1248] {salty snack}                => {soda}              0.009354347 0.2473118 0.037824098 1
## [1249] {chocolate}                  => {sausage}           0.006609049 0.1331967 0.049618709 1
## [1250] {frankfurter}                => {shopping bags} 0.008235892 0.1396552 0.058973055 1
## [1251] {pastry}                     => {tropical fruit} 0.013218099 0.1485714 0.088967972 1
## [1252] {tropical fruit}             => {pastry}            0.013218099 0.1259690 0.104931368 1
## [1253] {other vegetables, root vegetables} => {shopping bags} 0.006609049 0.1394850 0.047381800 1
## [1254] {long life bakery product}   => {whole milk}        0.013523132 0.3614130 0.037417387 1
## [1255] {bottled water, rolls/buns}   => {whole milk}        0.008744281 0.3613445 0.024199288 1
## [1256] {hamburger meat}             => {rolls/buns}        0.008642603 0.2599388 0.033248602 1
## [1257] {sausage}                   => {tropical fruit} 0.013929842 0.1482684 0.093950178 1
## [1258] {tropical fruit}             => {sausage}           0.013929842 0.1327519 0.104931368 1
## [1259] {root vegetables, whole milk} => {rolls/buns}        0.012709710 0.2598753 0.048906965 1
## [1260] {beef}                       => {rolls/buns}        0.013624809 0.2596899 0.052465684 1
## [1261] {pork}                      => {tropical fruit} 0.008540925 0.1481481 0.057651246 1
## [1262] {tropical fruit, whole milk}  => {rolls/buns}        0.010981190 0.2596154 0.042297916 1
## [1263] {salty snack}                => {tropical fruit} 0.005592272 0.1478495 0.037824098 1
## [1264] {newspapers}                 => {tropical fruit} 0.011794611 0.1477707 0.079816980 1
## [1265] {tropical fruit}             => {newspapers}        0.011794611 0.1124031 0.104931368 1
## [1266] {soda},

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##	tropical fruit}	=> {rolls/buns}	0.005388917	0.2585366	0.020843925	1
## [1267]	{rolls/buns,	=> {yogurt}	0.005998983	0.1960133	0.030604982	1
##	sausage}	=> {rolls/buns}	0.005592272	0.2582160	0.021657346	1
## [1268]	{other vegetables,	=> {yogurt}	0.007524148	0.1957672	0.038434164	1
##	pork}	=> {yogurt}	0.006507372	0.1957187	0.033248602	1
## [1269]	{waffles}	=> {rolls/buns}	0.012201322	0.2575107	0.047381800	1
## [1270]	{hamburger meat}	=> {other vegetables}	0.005287239	0.2708333	0.019522115	1
## [1271]	{other vegetables,	=> {shopping bags}	0.007219115	0.1378641	0.052364006	1
##	root vegetables}	=> {soda}	0.010269446	0.2439614	0.042094560	1
## [1272]	{rolls/buns,	=> {pastry}	0.005897306	0.1244635	0.047381800	1
##	shopping bags}	=> {pip fruit}	0.006100661	0.1058201	0.057651246	1
## [1273]	{napkins}	=> {soda}	0.006100661	0.2439024	0.025012710	1
## [1274]	{white bread}	=> {bottled water}	0.008744281	0.1543986	0.056634469	1
## [1275]	{other vegetables,	=> {rolls/buns}	0.008540925	0.2568807	0.033248602	1
##	root vegetables}	=> {newspapers}	0.008337570	0.1114130	0.074834774	1
## [1276]	{pork}	=> {soda}	0.005490595	0.2432432	0.022572445	1
## [1277]	{ice cream}	=> {yogurt}	0.008337570	0.1943128	0.042907982	1
## [1278]	{rolls/buns,	=> {rolls/buns}	0.006304016	0.2561983	0.024605999	1
##	whole milk}	=> {rolls/buns}	0.005388917	0.2560386	0.021047280	1
## [1279]	{pastry,	=> {whole milk}	0.011794611	0.3547401	0.033248602	1
##	whole milk}	=> {newspapers}	0.005490595	0.1106557	0.049618709	1
## [1280]	{other vegetables,	=> {tropical fruit}	0.007625826	0.1453488	0.052465684	1
##	whole milk}	=> {rolls/buns}	0.008744281	0.2544379	0.034367056	1
## [1281]	{other vegetables,	=> {yogurt}	0.015353330	0.1923567	0.079816980	1
##	pastry}	=> {newspapers}	0.015353330	0.1100583	0.139501779	1
## [1282]	{chicken}	=> {other vegetables}	0.007524148	0.2652330	0.028368073	1
## [1283]	{shopping bags,	=> {rolls/buns}	0.014743264	0.2517361	0.058566345	1
##	soda}	=> {rolls/buns}	0.009964413	0.2512821	0.039654296	1
## [1284]	{pastry,	=> {newspapers}	0.006914082	0.1089744	0.063446873	1
##	soda}	=> {sausage}	0.006710727	0.1281553	0.052364006	1
## [1285]	{berries}	=> {citrus fruit}	0.006507372	0.1128748	0.057651246	1
## [1286]	{chocolate}	=> {whole milk}	0.020538892	0.3482759	0.058973055	1
## [1287]	{beef}	=> {whole milk}	0.009862735	0.3476703	0.028368073	1
## [1288]	{bottled water,	=> {yogurt}	0.011184545	0.1896552	0.058973055	1
##	whole milk}	=> {pastry}	0.011896289	0.1207430	0.098525674	1
## [1289]	{newspapers}	=> {shopping bags}	0.011896289	0.1337143	0.088967972	1
## [1290]	{yogurt}	=> {rolls/buns}	0.008744281	0.2544379	0.034367056	1
## [1291]	{frozen meals}	=> {yogurt}	0.015353330	0.1923567	0.079816980	1
## [1292]	{margarine}	=> {newspapers}	0.015353330	0.1100583	0.139501779	1
## [1293]	{cream cheese}	=> {other vegetables}	0.007524148	0.2652330	0.028368073	1
## [1294]	{domestic eggs}	=> {rolls/buns}	0.014743264	0.2517361	0.058566345	1
## [1295]	{napkins}	=> {rolls/buns}	0.009964413	0.2512821	0.039654296	1
## [1296]	{pork}	=> {newspapers}	0.006914082	0.1089744	0.063446873	1
## [1297]	{frankfurter}	=> {sausage}	0.006710727	0.1281553	0.052364006	1
## [1298]	{frozen meals}	=> {citrus fruit}	0.006507372	0.1128748	0.057651246	1
## [1299]	{frankfurter}	=> {whole milk}	0.020538892	0.3482759	0.058973055	1
## [1300]	{shopping bags}	=> {whole milk}	0.009862735	0.3476703	0.028368073	1
## [1301]	{pastry}	=> {yogurt}	0.011184545	0.1896552	0.058973055	1
## [1302]	{shopping bags,	=> {pastry}	0.011896289	0.1207430	0.098525674	1
##	yogurt}	=> {shopping bags}	0.011896289	0.1337143	0.088967972	1
## [1303]	{pastry}	=> {whole milk}	0.005287239	0.3466667	0.015251652	1
## [1304]	{soda}	=> {soda}	0.021047280	0.2365714	0.088967972	1
## [1305]	{root vegetables,	=> {pastry}	0.021047280	0.1206997	0.174377224	1
##	whole milk}	=> {bottled water}	0.007320793	0.1496881	0.048906965	1

## [1306] {waffles}	=> {other vegetables}	0.010066090	0.2619048	0.038434164	1
## [1307] {frozen vegetables,					
## whole milk}	=> {rolls/buns}	0.005083884	0.2487562	0.020437214	1
## [1308] {oil}	=> {yogurt}	0.005287239	0.1884058	0.028063040	1
## [1309] {beef}	=> {pastry}	0.006304016	0.1201550	0.052465684	1
## [1310] {pastry,					
## soda}	=> {other vegetables}	0.005490595	0.2608696	0.021047280	1
## [1311] {cream cheese}	=> {bottled water}	0.005897306	0.1487179	0.039654296	1
## [1312] {whipped/sour cream}	=> {sausage}	0.009049314	0.1262411	0.071682766	1
## [1313] {newspapers}	=> {rolls/buns}	0.019725470	0.2471338	0.079816980	1
## [1314] {rolls/buns}	=> {newspapers}	0.019725470	0.1072416	0.183934926	1
## [1315] {domestic eggs}	=> {rolls/buns}	0.015658363	0.2467949	0.063446873	1
## [1316] {newspapers}	=> {whole milk}	0.027351296	0.3426752	0.079816980	1
## [1317] {whole milk}	=> {newspapers}	0.027351296	0.1070434	0.255516014	1
## [1318] {rolls/buns,					
## soda}	=> {tropical fruit}	0.005388917	0.1405836	0.038332486	1
## [1319] {other vegetables,					
## root vegetables}	=> {bottled water}	0.007015760	0.1480687	0.047381800	1
## [1320] {rolls/buns}	=> {yogurt}	0.034367056	0.1868436	0.183934926	1
## [1321] {yogurt}	=> {rolls/buns}	0.034367056	0.2463557	0.139501779	1
## [1322] {curd}	=> {newspapers}	0.005693950	0.1068702	0.053279105	1
## [1323] {coffee}	=> {pastry}	0.006914082	0.1190893	0.058057956	1
## [1324] {chocolate}	=> {yogurt}	0.009252669	0.1864754	0.049618709	1
## [1325] {frankfurter}	=> {citrus fruit}	0.006507372	0.1103448	0.058973055	1
## [1326] {coffee}	=> {citrus fruit}	0.006405694	0.1103327	0.058057956	1
## [1327] {other vegetables,					
## shopping bags}	=> {soda}	0.005388917	0.2324561	0.023182511	1
## [1328] {rolls/buns,					
## soda}	=> {other vegetables}	0.009862735	0.2572944	0.038332486	1
## [1329] {fruit/vegetable juice}	=> {pastry}	0.008540925	0.1181435	0.072292832	1
## [1330] {frozen vegetables}	=> {sausage}	0.005998983	0.1247357	0.048093543	1
## [1331] {other vegetables,					
## rolls/buns}	=> {soda}	0.009862735	0.2315036	0.042602949	1
## [1332] {pastry}	=> {citrus fruit}	0.009761057	0.1097143	0.088967972	1
## [1333] {citrus fruit}	=> {pastry}	0.009761057	0.1179361	0.082765633	1
## [1334] {chocolate}	=> {other vegetables}	0.012709710	0.2561475	0.049618709	1
## [1335] {root vegetables}	=> {newspapers}	0.011489578	0.1054104	0.108998475	1
## [1336] {newspapers}	=> {root vegetables}	0.011489578	0.1439490	0.079816980	1
## [1337] {whipped/sour cream,					
## whole milk}	=> {rolls/buns}	0.007829181	0.2429022	0.032231825	1
## [1338] {butter}	=> {rolls/buns}	0.013421454	0.2422018	0.055414337	1
## [1339] {candy}	=> {yogurt}	0.005490595	0.1836735	0.029893238	1
## [1340] {bottled water,					
## other vegetables}	=> {soda}	0.005693950	0.2295082	0.024809354	1
## [1341] {chocolate}	=> {whole milk}	0.016675140	0.3360656	0.049618709	1
## [1342] {napkins}	=> {soda}	0.011997966	0.2291262	0.052364006	1
## [1343] {fruit/vegetable juice,					
## whole milk}	=> {soda}	0.006100661	0.2290076	0.026639553	1
## [1344] {chicken}	=> {sausage}	0.005287239	0.1232227	0.042907982	1
## [1345] {other vegetables}	=> {pastry}	0.022572445	0.1166579	0.193492628	1
## [1346] {pastry}	=> {other vegetables}	0.022572445	0.2537143	0.088967972	1
## [1347] {butter}	=> {newspapers}	0.005795628	0.1045872	0.055414337	1
## [1348] {domestic eggs,					
## other vegetables}	=> {soda}	0.005083884	0.2283105	0.022267412	1

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## [1349] {root vegetables,
##         whole milk} => {pastry} 0.005693950 0.1164241 0.048906965 1
## [1350] {hard cheese} => {rolls/buns} 0.005897306 0.2406639 0.024504321 1
## [1351] {shopping bags} => {tropical fruit} 0.013523132 0.1372549 0.098525674 1
## [1352] {tropical fruit} => {shopping bags} 0.013523132 0.1288760 0.104931368 1
## [1353] {margarine} => {pastry} 0.006812405 0.1163194 0.058566345 1
## [1354] {UHT-milk} => {soda} 0.007625826 0.2279635 0.033451957 1
## [1355] {domestic eggs} => {bottled water} 0.009150991 0.1442308 0.063446873 1
## [1356] {butter,
##         whole milk} => {rolls/buns} 0.006609049 0.2398524 0.027554652 1
## [1357] {other vegetables,
##         whole milk} => {bottled water} 0.010777834 0.1440217 0.074834774 1
## [1358] {other vegetables,
##         whole milk} => {rolls/buns} 0.017895272 0.2391304 0.074834774 1
## [1359] {bottled water} => {root vegetables} 0.015658363 0.1416743 0.110523640 1
## [1360] {root vegetables} => {bottled water} 0.015658363 0.1436567 0.108998475 1
## [1361] {butter} => {bottled beer} 0.005795628 0.1045872 0.055414337 1
## [1362] {fruit/vegetable juice,
##         soda} => {whole milk} 0.006100661 0.3314917 0.018403660 1
## [1363] {long life bakery product} => {root vegetables} 0.005287239 0.1413043 0.037417387 1
## [1364] {candy} => {rolls/buns} 0.007117438 0.2380952 0.029893238 1
## [1365] {waffles} => {rolls/buns} 0.009150991 0.2380952 0.038434164 1
## [1366] {tropical fruit,
##         yogurt} => {soda} 0.006609049 0.2256944 0.029283172 1
## [1367] {waffles} => {whole milk} 0.012709710 0.3306878 0.038434164 1
## [1368] {margarine} => {bottled beer} 0.006100661 0.1041667 0.058566345 1
## [1369] {margarine} => {sausage} 0.007117438 0.1215278 0.058566345 1
## [1370] {chocolate} => {rolls/buns} 0.011794611 0.2377049 0.049618709 1
## [1371] {other vegetables,
##         shopping bags} => {whole milk} 0.007625826 0.3289474 0.023182511 1
## [1372] {sausage,
##         whole milk} => {soda} 0.006710727 0.2244898 0.029893238 1
## [1373] {citrus fruit,
##         whole milk} => {rolls/buns} 0.007219115 0.2366667 0.030503305 1
## [1374] {grapes} => {whole milk} 0.007320793 0.3272727 0.022369090 1
## [1375] {pastry} => {rolls/buns} 0.020945602 0.2354286 0.088967972 1
## [1376] {rolls/buns} => {pastry} 0.020945602 0.1138751 0.183934926 1
## [1377] {newspapers} => {bottled water} 0.011286223 0.1414013 0.079816980 1
## [1378] {bottled water} => {newspapers} 0.011286223 0.1021159 0.110523640 1
## [1379] {bottled water,
##         soda} => {rolls/buns} 0.006812405 0.2350877 0.028978139 1
## [1380] {tropical fruit} => {rolls/buns} 0.024605999 0.2344961 0.104931368 1
## [1381] {rolls/buns} => {tropical fruit} 0.024605999 0.1337756 0.183934926 1
## [1382] {coffee} => {sausage} 0.006914082 0.1190893 0.058057956 1
## [1383] {other vegetables,
##         whole milk} => {bottled beer} 0.007625826 0.1019022 0.074834774 1
## [1384] {pip fruit} => {bottled water} 0.010574479 0.1397849 0.075648195 1
## [1385] {dessert} => {bottled water} 0.005185562 0.1397260 0.037112354 1
## [1386] {other vegetables,
##         whipped/sour cream} => {rolls/buns} 0.006710727 0.2323944 0.028876462 1
## [1387] {berries} => {soda} 0.007320793 0.2201835 0.033248602 1
## [1388] {newspapers} => {citrus fruit} 0.008337570 0.1044586 0.079816980 1
## [1389] {citrus fruit} => {newspapers} 0.008337570 0.1007371 0.082765633 1
## [1390] {whipped/sour cream} => {newspapers} 0.007219115 0.1007092 0.071682766 1

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## [1391] {coffee} => {whole milk} 0.018708693 0.3222417 0.058057956 1
## [1392] {other vegetables, => {shopping bags} 0.005388917 0.1241218 0.043416370 1
## yogurt} => {shopping bags} 0.005287239 0.1241050 0.042602949 1
## [1393] {other vegetables, => {other vegetables} 0.008134215 0.2431611 0.033451957 1
## rolls/buns} => {soda} 0.005388917 0.2190083 0.024605999 1
## [1394] {UHT-milk} => {soda} 0.007524148 0.2189349 0.034367056 1
## [1395] {rolls/buns, => {shopping bags} 0.009354347 0.1236559 0.075648195 1
## tropical fruit} => {soda} 0.006202339 0.2186380 0.028368073 1
## [1396] {bottled water, => {other vegetables} 0.019318760 0.2420382 0.079816980 1
## whole milk} => {whole milk} 0.029893238 0.3181818 0.093950178 1
## [1397] {pip fruit} => {sausage} 0.029893238 0.1169916 0.255516014 1
## [1398] {frozen meals} => {rolls/buns} 0.005287239 0.2280702 0.023182511 1
## [1399] {newspapers} => {soda} 0.007320793 0.2162162 0.033858668 1
## [1400] {sausage} => {pastry} 0.006304016 0.1093474 0.057651246 1
## [1401] {whole milk} => {rolls/buns} 0.005897306 0.2256809 0.026131164 1
## [1402] {other vegetables, => {rolls/buns} 0.009659380 0.2251185 0.042907982 1
## shopping bags} => {soda} 0.005998983 0.3121693 0.019217082 1
## [1403] {sugar} => {soda} 0.007015760 0.2129630 0.032943569 1
## [1404] {pork} => {soda} 0.005490595 0.2125984 0.025826131 1
## [1405] {curd, => {whole milk} 0.034367056 0.3109476 0.110523640 1
## whole milk} => {bottled water} 0.034367056 0.1345006 0.255516014 1
## [1406] {chicken} => {other vegetables} 0.023182511 0.2352941 0.098525674 1
## [1407] {frankfurter, => {shopping bags} 0.023182511 0.1198108 0.193492628 1
## rolls/buns} => {rolls/buns} 0.011692933 0.2233010 0.052364006 1
## [1408] {hygiene articles} => {rolls/buns} 0.024300966 0.2229478 0.108998475 1
## [1409] {meat} => {rolls/buns} 0.024300966 0.1321172 0.183934926 1
## [1410] {bottled water} => {root vegetables} 0.016980173 0.2108586 0.080528724 1
## [1411] {whole milk} => {soda} 0.009761057 0.1681261 0.058057956 1
## [1412] {shopping bags} => {yogurt} 0.056634469 0.3079049 0.183934926 1
## [1413] {other vegetables} => {whole milk} 0.056634469 0.2216474 0.255516014 1
## [1414] {napkins} => {rolls/buns} 0.006507372 0.1128748 0.057651246 1
## [1415] {root vegetables} => {sausage} 0.008845958 0.2208122 0.040061007 1
## [1416] {rolls/buns} => {rolls/buns} 0.006609049 0.2203390 0.029994916 1
## [1417] {bottled beer} => {other vegetables} 0.042602949 0.2316197 0.183934926 1
## [1418] {coffee} => {rolls/buns} 0.042602949 0.2201787 0.193492628 1
## [1419] {rolls/buns} => {shopping bags} 0.009761057 0.1179361 0.082765633 1
## [1420] {whole milk} => {whole milk} 0.009354347 0.3056478 0.030604982 1
## [1421] {pork} => {other vegetables} 0.006914082 0.2312925 0.029893238 1
## [1422] {soda} => {rolls/buns} 0.038332486 0.2198251 0.174377224 1
## whole milk} => {soda} 0.038332486 0.2084024 0.183934926 1
## [1423] {domestic eggs, => {other vegetables} 0.013421454 0.2311734 0.058057956 1
## whole milk} => {rolls/buns} 0.006812405 0.2196721 0.031011693 1
## [1424] {rolls/buns} => {rolls/buns} 0.012811388 0.1300310 0.098525674 1
## [1425] {other vegetables} => {root vegetables} 0.012811388 0.1175373 0.108998475 1
## [1426] {citrus fruit} => {shopping bags} 0.009659380 0.2251185 0.042907982 1
## [1427] {rolls/buns, => {whole milk} 0.009354347 0.3056478 0.030604982 1
## sausage} => {other vegetables} 0.006914082 0.2312925 0.029893238 1
## [1428] {candy} => {rolls/buns} 0.038332486 0.2198251 0.174377224 1
## [1429] {soda} => {soda} 0.038332486 0.2084024 0.183934926 1
## [1430] {rolls/buns} => {other vegetables} 0.013421454 0.2311734 0.058057956 1
## [1431] {coffee} => {rolls/buns} 0.006812405 0.2196721 0.031011693 1
## [1432] {onions} => {root vegetables} 0.012811388 0.1300310 0.098525674 1
## [1433] {shopping bags} => {shopping bags} 0.012811388 0.1175373 0.108998475 1
## [1434] {root vegetables}

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## [1435] {rolls/buns} => {bottled water} 0.024199288 0.1315644 0.183934926 1
## [1436] {bottled water} => {rolls/buns} 0.024199288 0.2189512 0.110523640 1
## [1437] {sliced cheese} => {soda} 0.005083884 0.2074689 0.024504321 1
## [1438] {specialty chocolate} => {soda} 0.006304016 0.2073579 0.030401627 1
## [1439] {newspapers} => {pastry} 0.008439248 0.1057325 0.079816980 1
## [1440] {pork} => {yogurt} 0.009557702 0.1657848 0.057651246 1
## [1441] {other vegetables, tropical fruit} => {rolls/buns} 0.007829181 0.2181303 0.035892222 1
## [1442] {chocolate} => {root vegetables} 0.006405694 0.1290984 0.049618709 1
## [1443] {pork} => {soda} 0.011896289 0.2063492 0.057651246 1
## [1444] {whipped/sour cream} => {pastry} 0.007524148 0.1049645 0.071682766 1
## [1445] {dishes} => {whole milk} 0.005287239 0.3005780 0.017590239 1
## [1446] {salty snack} => {yogurt} 0.006202339 0.1639785 0.037824098 1
## [1447] {shopping bags, whole milk} => {rolls/buns} 0.005287239 0.2157676 0.024504321 1
## [1448] {long life bakery product} => {soda} 0.007625826 0.2038043 0.037417387 1
## [1449] {coffee} => {tropical fruit} 0.007117438 0.1225919 0.058057956 1
## [1450] {frozen vegetables} => {bottled water} 0.006202339 0.1289641 0.048093543 1
## [1451] {pork} => {bottled water} 0.007422471 0.1287478 0.057651246 1
## [1452] {bottled water} => {other vegetables} 0.024809354 0.2244710 0.110523640 1
## [1453] {other vegetables} => {bottled water} 0.024809354 0.1282186 0.193492628 1
## [1454] {salty snack} => {whole milk} 0.011184545 0.2956989 0.037824098 1
## [1455] {coffee} => {root vegetables} 0.007320793 0.1260946 0.058057956 1
## [1456] {brown bread, whole milk} => {soda} 0.005083884 0.2016129 0.025216065 1
## [1457] {sausage} => {bottled water} 0.011997966 0.1277056 0.093950178 1
## [1458] {bottled water} => {sausage} 0.011997966 0.1085557 0.110523640 1
## [1459] {other vegetables, tropical fruit} => {soda} 0.007219115 0.2011331 0.035892222 1
## [1460] {long life bakery product} => {rolls/buns} 0.007930859 0.2119565 0.037417387 1
## [1461] {frozen vegetables} => {rolls/buns} 0.010167768 0.2114165 0.048093543 1
## [1462] {brown bread} => {bottled water} 0.008235892 0.1269592 0.064870361 1
## [1463] {fruit/vegetable juice, whole milk} => {rolls/buns} 0.005592272 0.2099237 0.026639553 1
## [1464] {coffee} => {bottled water} 0.007320793 0.1260946 0.058057956 1
## [1465] {brown bread, whole milk} => {rolls/buns} 0.005287239 0.2096774 0.025216065 1
## [1466] {tropical fruit} => {soda} 0.020843925 0.1986434 0.104931368 1
## [1467] {soda} => {tropical fruit} 0.020843925 0.1195335 0.174377224 1
## [1468] {beef} => {sausage} 0.005592272 0.1065891 0.052465684 1
## [1469] {pastry} => {root vegetables} 0.010981190 0.1234286 0.088967972 1
## [1470] {root vegetables} => {pastry} 0.010981190 0.1007463 0.108998475 1
## [1471] {shopping bags, soda} => {other vegetables} 0.005388917 0.2190083 0.024605999 1
## [1472] {citrus fruit, other vegetables} => {rolls/buns} 0.005998983 0.2077465 0.028876462 1
## [1473] {pork} => {shopping bags} 0.006405694 0.1111111 0.057651246 1
## [1474] {sugar} => {rolls/buns} 0.007015760 0.2072072 0.033858668 1
## [1475] {beverages} => {rolls/buns} 0.005388917 0.2070312 0.026029487 1
## [1476] {soda} => {yogurt} 0.027351296 0.1568513 0.174377224 1
## [1477] {yogurt} => {soda} 0.027351296 0.1960641 0.139501779 1
## [1478] {frankfurter} => {bottled water} 0.007320793 0.1241379 0.058973055 1
## [1479] {whipped/sour cream} => {shopping bags} 0.007930859 0.1106383 0.071682766 1
## [1480] {domestic eggs} => {soda} 0.012404677 0.1955128 0.063446873 1

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## [1481] {pip fruit,
##         whole milk} => {rolls/buns} 0.006202339 0.2060811 0.030096594 1
## [1482] {chicken} => {bottled water} 0.005287239 0.1232227 0.042907982 1
## [1483] {brown bread} => {soda} 0.012608033 0.1943574 0.064870361 1
## [1484] {chicken} => {soda} 0.008337570 0.1943128 0.042907982 1
## [1485] {specialty bar} => {rolls/buns} 0.005592272 0.2044610 0.027351296 1
## [1486] {whipped/sour cream} => {rolls/buns} 0.014641586 0.2042553 0.071682766 1
## [1487] {shopping bags} => {yogurt} 0.015251652 0.1547988 0.098525674 1
## [1488] {yogurt} => {shopping bags} 0.015251652 0.1093294 0.139501779 1
## [1489] {whipped/sour cream} => {bottled water} 0.008744281 0.1219858 0.071682766 1
## [1490] {citrus fruit} => {rolls/buns} 0.016776817 0.2027027 0.082765633 1
## [1491] {other vegetables,
##         yogurt} => {soda} 0.008337570 0.1920375 0.043416370 1
## [1492] {bottled beer} => {root vegetables} 0.009659380 0.1199495 0.080528724 1
## [1493] {frankfurter} => {soda} 0.011286223 0.1913793 0.058973055 1
## [1494] {root vegetables,
##         whole milk} => {shopping bags} 0.005287239 0.1081081 0.048906965 1
## [1495] {fruit/vegetable juice} => {rolls/buns} 0.014539908 0.2011252 0.072292832 1
## [1496] {shopping bags,
##         soda} => {whole milk} 0.006812405 0.2768595 0.024605999 1
## [1497] {sausage,
##         soda} => {whole milk} 0.006710727 0.2761506 0.024300966 1
## [1498] {berries} => {rolls/buns} 0.006609049 0.1987768 0.033248602 1
## [1499] {candy} => {whole milk} 0.008235892 0.2755102 0.029893238 1
## [1500] {shopping bags} => {rolls/buns} 0.019522115 0.1981424 0.098525674 1
## [1501] {rolls/buns} => {shopping bags} 0.019522115 0.1061360 0.183934926 1
## [1502] {whole milk,
##         yogurt} => {soda} 0.010472801 0.1869328 0.056024403 1
## [1503] {newspapers} => {sausage} 0.008032537 0.1006369 0.079816980 1
## [1504] {beef} => {bottled water} 0.006202339 0.1182171 0.052465684 1
## [1505] {other vegetables,
##         whole milk} => {soda} 0.013929842 0.1861413 0.074834774 1
## [1506] {pork} => {rolls/buns} 0.011286223 0.1957672 0.057651246 1
## [1507] {tropical fruit,
##         whole milk} => {soda} 0.007829181 0.1850962 0.042297916 1
## [1508] {rolls/buns,
##         shopping bags} => {whole milk} 0.005287239 0.2708333 0.019522115 1
## [1509] {other vegetables,
##         pip fruit} => {rolls/buns} 0.005083884 0.1945525 0.026131164 1
## [1510] {chocolate} => {bottled water} 0.005795628 0.1168033 0.049618709 1
## [1511] {specialty bar} => {other vegetables} 0.005592272 0.2044610 0.027351296 1
## [1512] {brown bread} => {rolls/buns} 0.012608033 0.1943574 0.064870361 1
## [1513] {newspapers} => {soda} 0.014641586 0.1834395 0.079816980 1
## [1514] {ice cream} => {other vegetables} 0.005083884 0.2032520 0.025012710 1
## [1515] {UHT-milk} => {rolls/buns} 0.006405694 0.1914894 0.033451957 1
## [1516] {bottled beer} => {other vegetables} 0.016166751 0.2007576 0.080528724 1
## [1517] {specialty chocolate} => {other vegetables} 0.006100661 0.2006689 0.030401627 1
## [1518] {curd} => {bottled water} 0.006100661 0.1145038 0.053279105 1
## [1519] {other vegetables,
##         whole milk} => {shopping bags} 0.007625826 0.1019022 0.074834774 1
## [1520] {specialty chocolate} => {whole milk} 0.008032537 0.2642140 0.030401627 1
## [1521] {frozen vegetables} => {soda} 0.008642603 0.1797040 0.048093543 1
## [1522] {beverages} => {other vegetables} 0.005185562 0.1992188 0.026029487 1
## [1523] {coffee} => {rolls/buns} 0.010981190 0.1891419 0.058057956 1

```

## [1524] {curd}	=> {rolls/buns}	0.010066090	0.1889313	0.053279105	1
## [1525] {curd}	=> {shopping bags}	0.005388917	0.1011450	0.053279105	1
## [1526] {beverages}	=> {whole milk}	0.006812405	0.2617188	0.026029487	1
## [1527] {canned beer}	=> {soda}	0.013828165	0.1780105	0.077681749	1
## [1528] {misc. beverages}	=> {other vegetables}	0.005592272	0.1971326	0.028368073	1
## [1529] {bottled water,					
## soda}	=> {whole milk}	0.007524148	0.2596491	0.028978139	1
## [1530] {bottled water,					
## soda}	=> {other vegetables}	0.005693950	0.1964912	0.028978139	1
## [1531] {pip fruit}	=> {soda}	0.013319776	0.1760753	0.075648195	1
## [1532] {shopping bags}	=> {bottled water}	0.010981190	0.1114551	0.098525674	1
## [1533] {pip fruit}	=> {rolls/buns}	0.013929842	0.1841398	0.075648195	1
## [1534] {specialty chocolate}	=> {rolls/buns}	0.005592272	0.1839465	0.030401627	1
## [1535] {}	=> {yogurt}	0.139501779	0.1395018	1.000000000	1
## [1536] {}	=> {rolls/buns}	0.183934926	0.1839349	1.000000000	1
## [1537] {}	=> {bottled water}	0.110523640	0.1105236	1.000000000	1
## [1538] {}	=> {tropical fruit}	0.104931368	0.1049314	1.000000000	1
## [1539] {}	=> {root vegetables}	0.108998475	0.1089985	1.000000000	1
## [1540] {}	=> {soda}	0.174377224	0.1743772	1.000000000	1
## [1541] {}	=> {other vegetables}	0.193492628	0.1934926	1.000000000	1
## [1542] {}	=> {whole milk}	0.255516014	0.2555160	1.000000000	1
## [1543] {hamburger meat}	=> {soda}	0.005795628	0.1743119	0.033248602	0
## [1544] {dessert}	=> {rolls/buns}	0.006812405	0.1835616	0.037112354	0
## [1545] {other vegetables,					
## root vegetables}	=> {soda}	0.008235892	0.1738197	0.047381800	0
## [1546] {margarine}	=> {soda}	0.010167768	0.1736111	0.058566345	0
## [1547] {bottled beer}	=> {whole milk}	0.020437214	0.2537879	0.080528724	0
## [1548] {domestic eggs,					
## whole milk}	=> {soda}	0.005185562	0.1728814	0.029994916	0
## [1549] {cream cheese}	=> {soda}	0.006812405	0.1717949	0.039654296	0
## [1550] {oil}	=> {rolls/buns}	0.005083884	0.1811594	0.028063040	0
## [1551] {coffee}	=> {soda}	0.009964413	0.1716287	0.058057956	0
## [1552] {root vegetables}	=> {soda}	0.018607016	0.1707090	0.108998475	0
## [1553] {soda}	=> {root vegetables}	0.018607016	0.1067055	0.174377224	0
## [1554] {onions}	=> {soda}	0.005287239	0.1704918	0.031011693	0
## [1555] {whipped/sour cream,					
## whole milk}	=> {soda}	0.005490595	0.1703470	0.032231825	0
## [1556] {bottled beer}	=> {tropical fruit}	0.008235892	0.1022727	0.080528724	0
## [1557] {shopping bags}	=> {whole milk}	0.024504321	0.2487100	0.098525674	0
## [1558] {hygiene articles}	=> {rolls/buns}	0.005897306	0.1790123	0.032943569	0
## [1559] {soda}	=> {other vegetables}	0.032740214	0.1877551	0.174377224	0
## [1560] {other vegetables}	=> {soda}	0.032740214	0.1692065	0.193492628	0
## [1561] {misc. beverages}	=> {whole milk}	0.007015760	0.2473118	0.028368073	0
## [1562] {root vegetables,					
## whole milk}	=> {soda}	0.008134215	0.1663202	0.048906965	0
## [1563] {chewing gum}	=> {whole milk}	0.005083884	0.2415459	0.021047280	0
## [1564] {canned beer}	=> {bottled water}	0.008032537	0.1034031	0.077681749	0
## [1565] {specialty bar}	=> {whole milk}	0.006507372	0.2379182	0.027351296	0
## [1566] {whipped/sour cream}	=> {soda}	0.011591256	0.1617021	0.071682766	0
## [1567] {ice cream}	=> {whole milk}	0.005897306	0.2357724	0.025012710	0
## [1568] {bottled beer}	=> {rolls/buns}	0.013624809	0.1691919	0.080528724	0
## [1569] {butter}	=> {soda}	0.008845958	0.1596330	0.055414337	0
## [1570] {pastry}	=> {bottled water}	0.008947636	0.1005714	0.088967972	0
## [1571] {rolls/buns,					

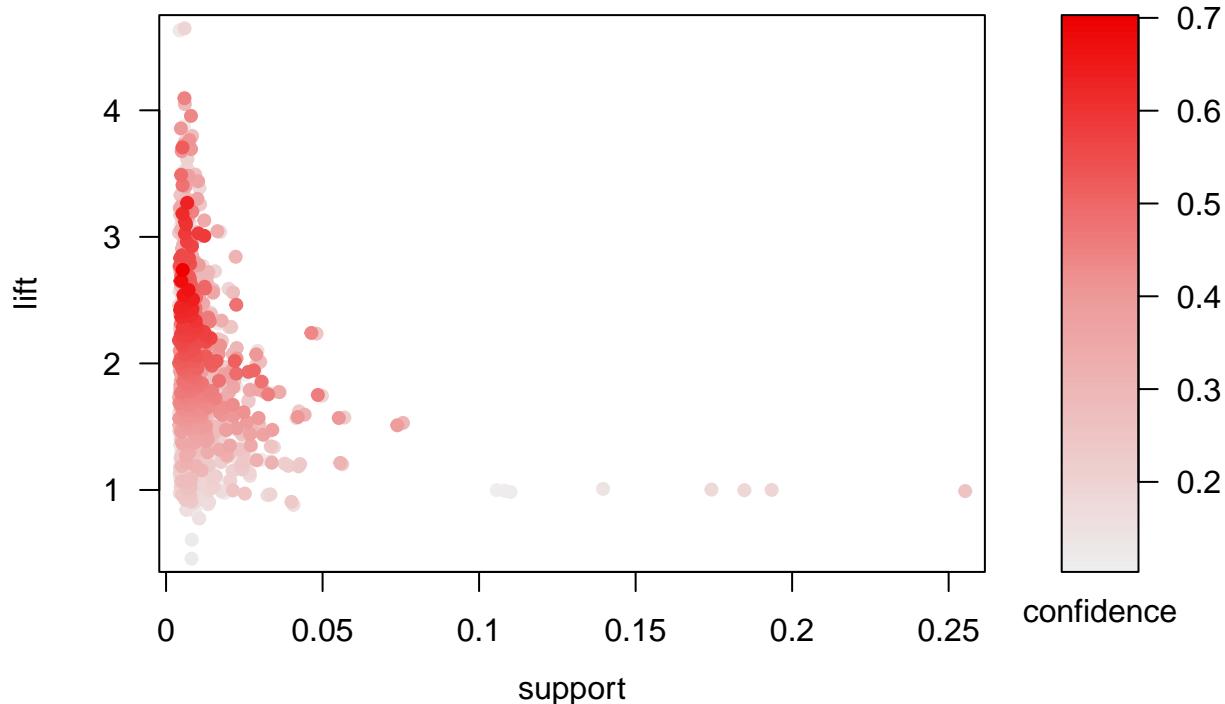
```

##      soda} => {whole milk} 0.008845958 0.2307692 0.038332486 0
## [1572] {soda} => {whole milk} 0.040061007 0.2297376 0.174377224 0
## [1573] {whole milk} => {soda} 0.040061007 0.1567847 0.255516014 0
## [1574] {rolls/buns, whole milk} => {soda} 0.008845958 0.1561939 0.056634469 0
## [1575] {beef} => {soda} 0.008134215 0.1550388 0.052465684 0
## [1576] {citrus fruit} => {soda} 0.012811388 0.1547912 0.082765633 0
## [1577] {curd} => {soda} 0.008134215 0.1526718 0.053279105 0
## [1578] {white bread} => {rolls/buns} 0.006507372 0.1545894 0.042094560 0
## [1579] {bottled beer} => {yogurt} 0.009252669 0.1148990 0.080528724 0
## [1580] {canned beer} => {rolls/buns} 0.011286223 0.1452880 0.077681749 0
## [1581] {canned beer} => {other vegetables} 0.009049314 0.1164921 0.077681749 0
## [1582] {canned beer} => {whole milk} 0.008845958 0.1138743 0.077681749 0
## NULL
# can swap the axes and color scales
plot(groceries_rule, measure = c("support", "lift"), shading = "confidence")

```

To reduce overplotting, jitter is added! Use jitter = 0 to prevent jitter.

Scatter plot for 1582 rules



```
# inspect subsets
inspect(subset(groceries_rule, subset=lift > 2.5))
```

	lhs	rhs	support	confidence	coverage
## [1]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429 3.9
## [2]	{soft cheese}	=> {yogurt}	0.005998983	0.3511905	0.017081851 2.8
## [3]	{grapes}	=> {tropical fruit}	0.006100661	0.2727273	0.022369090 2.8
## [4]	{ham}	=> {white bread}	0.005083884	0.1953125	0.026029487 4.0
## [5]	{white bread}	=> {ham}	0.005083884	0.1207729	0.042094560 4.0
## [6]	{sliced cheese}	=> {sausage}	0.007015760	0.2863071	0.024504321 3.9

## [7]	{onions}	=> {root vegetables}	0.009456024	0.3049180	0.031011693	2.1
## [8]	{berries}	=> {whipped/sour cream}	0.009049314	0.2721713	0.033248602	3.1
## [9]	{whipped/sour cream}	=> {berries}	0.009049314	0.1262411	0.071682766	3.1
## [10]	{hygiene articles}	=> {napkins}	0.006100661	0.1851852	0.032943569	3.1
## [11]	{napkins}	=> {hygiene articles}	0.006100661	0.1165049	0.052364006	3.1
## [12]	{sugar}	=> {margarine}	0.005490595	0.1621622	0.033858668	2.1
## [13]	{waffles}	=> {chocolate}	0.005795628	0.1507937	0.038434164	3.1
## [14]	{chocolate}	=> {waffles}	0.005795628	0.1168033	0.049618709	3.1
## [15]	{long life bakery product}	=> {chocolate}	0.005287239	0.1413043	0.037417387	2.1
## [16]	{chocolate}	=> {long life bakery product}	0.005287239	0.1065574	0.049618709	2.1
## [17]	{dessert}	=> {curd}	0.005185562	0.1397260	0.037112354	2.1
## [18]	{chicken}	=> {frozen vegetables}	0.006710727	0.1563981	0.042907982	3.1
## [19]	{frozen vegetables}	=> {chicken}	0.006710727	0.1395349	0.048093543	3.1
## [20]	{beef}	=> {pork}	0.007625826	0.1453488	0.052465684	2.1
## [21]	{pork}	=> {beef}	0.007625826	0.1322751	0.057651246	2.1
## [22]	{beef}	=> {root vegetables}	0.017386884	0.3313953	0.052465684	3.1
## [23]	{root vegetables}	=> {beef}	0.017386884	0.1595149	0.108998475	3.1
## [24]	{curd}	=> {whipped/sour cream}	0.010472801	0.1965649	0.053279105	2.1
## [25]	{whipped/sour cream}	=> {curd}	0.010472801	0.1460993	0.071682766	2.1
## [26]	{butter}	=> {domestic eggs}	0.009659380	0.1743119	0.055414337	2.1
## [27]	{domestic eggs}	=> {butter}	0.009659380	0.1522436	0.063446873	2.1
## [28]	{butter}	=> {whipped/sour cream}	0.010167768	0.1834862	0.055414337	2.1
## [29]	{whipped/sour cream}	=> {butter}	0.010167768	0.1418440	0.071682766	2.1
## [30]	{pip fruit}	=> {tropical fruit}	0.020437214	0.2701613	0.075648195	2.1
## [31]	{tropical fruit}	=> {pip fruit}	0.020437214	0.1947674	0.104931368	2.1
## [32]	{onions,					
	root vegetables}	=> {other vegetables}	0.005693950	0.6021505	0.009456024	3.1
## [33]	{onions,					
	other vegetables}	=> {root vegetables}	0.005693950	0.4000000	0.014234875	3.1
## [34]	{other vegetables,					
	root vegetables}	=> {onions}	0.005693950	0.1201717	0.047381800	3.1
## [35]	{onions,					
	whole milk}	=> {other vegetables}	0.006609049	0.5462185	0.012099644	2.1
## [36]	{cream cheese,					
	other vegetables}	=> {yogurt}	0.005287239	0.3851852	0.013726487	2.1
## [37]	{other vegetables,					
	yogurt}	=> {cream cheese}	0.005287239	0.1217799	0.043416370	3.1
## [38]	{cream cheese,					
	whole milk}	=> {yogurt}	0.006609049	0.4012346	0.016471784	2.1
## [39]	{whole milk,					
	yogurt}	=> {cream cheese}	0.006609049	0.1179673	0.056024403	2.1
## [40]	{chicken,					
	root vegetables}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2.1
## [41]	{chicken,					
	other vegetables}	=> {root vegetables}	0.005693950	0.3181818	0.017895272	2.1
## [42]	{other vegetables,					
	root vegetables}	=> {chicken}	0.005693950	0.1201717	0.047381800	2.1
## [43]	{chicken,					
	whole milk}	=> {root vegetables}	0.005998983	0.3410405	0.017590239	3.1
## [44]	{root vegetables,					
	whole milk}	=> {chicken}	0.005998983	0.1226611	0.048906965	2.1
## [45]	{other vegetables,					
	whole milk}	=> {chicken}	0.008439248	0.1127717	0.074834774	2.1
## [46]	{soda,					

##	whole milk}	=> {chocolate}	0.005083884	0.1269036	0.040061007	2.0
## [47]	{frozen vegetables, root vegetables}	=> {other vegetables}	0.006100661	0.5263158	0.011591256	2.0
## [48]	{frozen vegetables, other vegetables}	=> {root vegetables}	0.006100661	0.3428571	0.017793594	3.0
## [49]	{other vegetables, root vegetables}	=> {frozen vegetables}	0.006100661	0.1287554	0.047381800	2.0
## [50]	{frozen vegetables, whole milk}	=> {root vegetables}	0.006202339	0.3034826	0.020437214	2.0
## [51]	{root vegetables, whole milk}	=> {frozen vegetables}	0.006202339	0.1268191	0.048906965	2.0
## [52]	{other vegetables, yogurt}	=> {frozen vegetables}	0.005287239	0.1217799	0.043416370	2.0
## [53]	{other vegetables, whole milk}	=> {frozen vegetables}	0.009659380	0.1290761	0.074834774	2.0
## [54]	{beef, other vegetables}	=> {root vegetables}	0.007930859	0.4020619	0.019725470	3.0
## [55]	{other vegetables, root vegetables}	=> {beef}	0.007930859	0.1673820	0.047381800	3.0
## [56]	{beef, whole milk}	=> {root vegetables}	0.008032537	0.3779904	0.021250635	3.0
## [57]	{root vegetables, whole milk}	=> {beef}	0.008032537	0.1642412	0.048906965	3.0
## [58]	{other vegetables, rolls/buns}	=> {beef}	0.005795628	0.1360382	0.042602949	2.0
## [59]	{curd, whole milk}	=> {whipped/sour cream}	0.005897306	0.2256809	0.026131164	3.0
## [60]	{whipped/sour cream, whole milk}	=> {curd}	0.005897306	0.1829653	0.032231825	3.0
## [61]	{curd, tropical fruit}	=> {yogurt}	0.005287239	0.5148515	0.010269446	3.0
## [62]	{curd, yogurt}	=> {tropical fruit}	0.005287239	0.3058824	0.017285206	2.0
## [63]	{tropical fruit, yogurt}	=> {curd}	0.005287239	0.1805556	0.029283172	3.0
## [64]	{curd, tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446	2.0
## [65]	{curd, other vegetables}	=> {tropical fruit}	0.005287239	0.3076923	0.017183528	2.0
## [66]	{other vegetables, tropical fruit}	=> {curd}	0.005287239	0.1473088	0.035892222	2.0
## [67]	{tropical fruit, whole milk}	=> {curd}	0.006507372	0.1538462	0.042297916	2.0
## [68]	{curd, root vegetables}	=> {other vegetables}	0.005490595	0.5046729	0.010879512	2.0
## [69]	{curd, other vegetables}	=> {root vegetables}	0.005490595	0.3195266	0.017183528	2.0
## [70]	{curd, other vegetables}	=> {yogurt}	0.006100661	0.3550296	0.017183528	2.0
## [71]	{other vegetables, yogurt}	=> {curd}	0.006100661	0.1405152	0.043416370	2.0
## [72]	{curd, whole milk}	=> {yogurt}	0.010066090	0.3852140	0.026131164	2.0
## [73]	{whole milk,					

##	yogurt}	=> {curd}	0.010066090	0.1796733	0.056024403	3.0
## [74]	{pork,	=> {other vegetables}	0.007015760	0.5149254	0.013624809	2.0
## [75]	root vegetables}	=> {root vegetables}	0.007015760	0.3239437	0.021657346	2.0
## [76]	{other vegetables,	=> {pork}	0.007015760	0.1480687	0.047381800	2.0
## [77]	pork}	=> {root vegetables}	0.006812405	0.3073394	0.022165735	2.0
## [78]	whole milk}	=> {other vegetables}	0.005592272	0.4954955	0.011286223	2.0
## [79]	{pork,	=> {bottled water}	0.005083884	0.2994012	0.016980173	2.0
## [80]	rolls/buns}	=> {bottled water}	0.006100661	0.2985075	0.020437214	2.0
## [81]	{bottled beer,	=> {domestic eggs}	0.005185562	0.2142857	0.024199288	3.0
## [82]	soda}	=> {margarine}	0.005185562	0.1728814	0.029994916	2.0
## [83]	{whole milk}	=> {other vegetables}	0.005897306	0.5321101	0.011082867	2.0
## [84]	{margarine,	=> {root vegetables}	0.005897306	0.2989691	0.019725470	2.0
## [85]	root vegetables}	=> {domestic eggs}	0.005998983	0.2177122	0.027554652	3.0
## [86]	{margarine,	=> {butter}	0.005998983	0.2000000	0.029994916	3.0
## [87]	other vegetables}	=> {other vegetables}	0.005795628	0.5700000	0.010167768	2.0
## [88]	{butter,	=> {whipped/sour cream}	0.005795628	0.2893401	0.020030503	4.0
## [89]	whole milk}	=> {butter}	0.005795628	0.2007042	0.028876462	3.0
## [90]	{domestic eggs,	=> {whole milk}	0.006710727	0.6600000	0.010167768	2.0
## [91]	whole milk}	=> {whipped/sour cream}	0.006710727	0.2435424	0.027554652	3.0
## [92]	{whipped/sour cream,	=> {butter}	0.006710727	0.2082019	0.032231825	3.0
## [93]	whole milk}	=> {butter}	0.005083884	0.1666667	0.030503305	3.0
## [94]	{bottled water,	=> {butter}	0.005388917	0.1568047	0.034367056	2.0
## [95]	whole milk}	=> {other vegetables}	0.005490595	0.5510204	0.009964413	2.0
## [96]	{butter,	=> {tropical fruit}	0.005490595	0.2741117	0.020030503	2.0
## [97]	tropical fruit}	=> {butter}	0.005490595	0.1529745	0.035892222	2.0
## [98]	{butter,	=> {butter}	0.006202339	0.1466346	0.042297916	2.0
## [99]	tropical fruit}	=> {other vegetables}	0.006609049	0.5118110	0.012913066	2.0
## [100]	whole milk}	=> {butter},				

## [101] {other vegetables, ## [101] {other vegetables, ## [101] {root vegetables, ## [101] {butter, ## [101] {whole milk} ## [103] {root vegetables, ## [103] {whole milk} ## [104] {other vegetables, ## [104] {yogurt} ## [105] {butter, ## [105] {yogurt} ## [106] {whole milk, ## [106] {yogurt} ## [107] {other vegetables, ## [107] {whole milk} ## [108] {newspapers, ## [108] {root vegetables} ## [109] {newspapers, ## [109] {other vegetables} ## [110] {domestic eggs, ## [110] {whipped/sour cream} ## [111] {domestic eggs, ## [111] {other vegetables} ## [112] {other vegetables, ## [112] {whipped/sour cream} ## [113] {domestic eggs, ## [113] {whole milk} ## [114] {whipped/sour cream, ## [114] {whole milk} ## [115] {pip fruit, ## [115] {whole milk} ## [116] {citrus fruit, ## [116] {whole milk} ## [117] {tropical fruit, ## [117] {whole milk} ## [118] {domestic eggs, ## [118] {root vegetables} ## [119] {domestic eggs, ## [119] {other vegetables} ## [120] {domestic eggs, ## [120] {whole milk} ## [121] {root vegetables, ## [121] {whole milk} ## [122] {other vegetables, ## [122] {whole milk} ## [123] {fruit/vegetable juice, ## [123] {soda} ## [124] {fruit/vegetable juice, ## [124] {other vegetables} ## [125] {other vegetables, ## [125] {tropical fruit} ## [126] {fruit/vegetable juice, ## [126] {root vegetables} ## [127] {fruit/vegetable juice, ## [127] {whole milk}	=> {root vegetables} => {butter} => {root vegetables} => {butter} => {butter} => {whole milk} => {butter} => {butter} => {butter} => {other vegetables} => {root vegetables} => {other vegetables} => {other vegetables} => {whipped/sour cream} => {domestic eggs} => {whipped/sour cream} => {domestic eggs} => {domestic eggs} => {domestic eggs} => {domestic eggs} => {other vegetables} => {root vegetables} => {root vegetables} => {domestic eggs} => {domestic eggs} => {bottled water} => {tropical fruit} => {fruit/vegetable juice} => {other vegetables}	0.006609049 0.006609049 0.008235892 0.008235892 0.006405694 0.009354347 0.009354347 0.011489578 0.005998983 0.005998983 0.005083884 0.005083884 0.005083884 0.005693950 0.005693950 0.005388917 0.005693950 0.006914082 0.005693950 0.006914082 0.007320793 0.007320793 0.008540925 0.008540925 0.008540925 0.012302999 0.005185562 0.006609049 0.006609049 0.006609049	0.3299492 0.1394850 0.2988930 0.1683992 0.1475410 0.6388889 0.1669691 0.1535326 0.5221239 0.3105263 0.5102041 0.2283105 0.1760563 0.1898305 0.1766562 0.1790541 0.1866667 0.1634615 0.056024403 0.011489578 0.019318760 0.009964413 0.022267412 0.028876462 0.029994916 0.032231825 0.030096594 0.030503305 0.042297916 0.014336553 0.022267412 0.029994916 0.048906965 0.074834774 0.011997966	0.020030503 0.047381800 0.027554652 0.048906965 0.043416370 0.014641586 0.056024403 0.074834774 0.011489578 0.019318760 0.009964413 0.022267412 0.028876462 0.029994916 0.032231825 0.030096594 0.030503305 0.042297916 0.014336553 0.022267412 0.029994916 0.048906965 0.074834774 0.011997966
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##	other vegetables}	=> {root vegetables}	0.006609049	0.3140097	0.021047280	2.8
## [128]	{soda, yogurt}	=> {fruit/vegetable juice}	0.005083884	0.1858736	0.027351296	2.8
## [129]	{fruit/vegetable juice, other vegetables}	=> {yogurt}	0.008235892	0.3913043	0.021047280	2.8
## [130]	{other vegetables, yogurt}	=> {fruit/vegetable juice}	0.008235892	0.1896956	0.043416370	2.8
## [131]	{fruit/vegetable juice, whole milk}	=> {yogurt}	0.009456024	0.3549618	0.026639553	2.8
## [132]	{pip fruit, whipped/sour cream}	=> {other vegetables}	0.005592272	0.6043956	0.009252669	3.1
## [133]	{other vegetables, whipped/sour cream}	=> {pip fruit}	0.005592272	0.1936620	0.028876462	2.8
## [134]	{other vegetables, pip fruit}	=> {whipped/sour cream}	0.005592272	0.2140078	0.026131164	2.8
## [135]	{pip fruit, whipped/sour cream}	=> {whole milk}	0.005998983	0.6483516	0.009252669	2.8
## [136]	{pip fruit, whole milk}	=> {whipped/sour cream}	0.005998983	0.1993243	0.030096594	2.7
## [137]	{citrus fruit, whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2.7
## [138]	{citrus fruit, other vegetables}	=> {whipped/sour cream}	0.005693950	0.1971831	0.028876462	2.7
## [139]	{citrus fruit, whole milk}	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305	2.8
## [140]	{tropical fruit, whipped/sour cream}	=> {yogurt}	0.006202339	0.4485294	0.013828165	3.1
## [141]	{whipped/sour cream, yogurt}	=> {tropical fruit}	0.006202339	0.2990196	0.020742247	2.8
## [142]	{tropical fruit, yogurt}	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172	2.9
## [143]	{tropical fruit, whipped/sour cream}	=> {other vegetables}	0.007829181	0.5661765	0.013828165	2.9
## [144]	{other vegetables, whipped/sour cream}	=> {tropical fruit}	0.007829181	0.2711268	0.028876462	2.8
## [145]	{other vegetables, tropical fruit}	=> {whipped/sour cream}	0.007829181	0.2181303	0.035892222	3.0
## [146]	{tropical fruit, whole milk}	=> {whipped/sour cream}	0.007930859	0.1875000	0.042297916	2.8
## [147]	{root vegetables, whipped/sour cream}	=> {yogurt}	0.006405694	0.3750000	0.017081851	2.8
## [148]	{whipped/sour cream, yogurt}	=> {root vegetables}	0.006405694	0.3088235	0.020742247	2.8
## [149]	{root vegetables, yogurt}	=> {whipped/sour cream}	0.006405694	0.2480315	0.025826131	3.0
## [150]	{root vegetables, whipped/sour cream}	=> {other vegetables}	0.008540925	0.5000000	0.017081851	2.8
## [151]	{other vegetables, whipped/sour cream}	=> {root vegetables}	0.008540925	0.2957746	0.028876462	2.8
## [152]	{other vegetables, root vegetables}	=> {whipped/sour cream}	0.008540925	0.1802575	0.047381800	2.8
## [153]	{whipped/sour cream, whole milk}	=> {root vegetables}	0.009456024	0.2933754	0.032231825	2.8
## [154]	{root vegetables,					

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##      whole milk}          => {whipped/sour cream}    0.009456024  0.1933472  0.048906965 2.0
## [155] {whipped/sour cream, => {other vegetables}    0.010167768  0.4901961  0.020742247 2.0
##      yogurt}              => {yogurt}                0.010167768  0.3521127  0.028876462 2.0
## [156] {other vegetables, => {whipped/sour cream}    0.010167768  0.2341920  0.043416370 3.0
##      whipped/sour cream}   => {whipped/sour cream}    0.010879512  0.1941924  0.056024403 2.0
## [157] {other vegetables, => {whipped/sour cream}    0.014641586  0.1956522  0.074834774 2.0
##      yogurt}              => {whipped/sour cream}    0.005592272  0.4044118  0.013828165 3.0
## [158] {whole milk,        => {tropical fruit}     0.005592272  0.2736318  0.020437214 3.0
##      yogurt}              => {citrus fruit}      0.005592272  0.2806122  0.019928826 3.0
## [159] {other vegetables, => {pip fruit}        0.005897306  0.2256809  0.026131164 2.0
##      whole milk}           => {citrus fruit}      0.005897306  0.2042254  0.028876462 2.0
## [160] {citrus fruit,      => {pip fruit}        0.005287239  0.3398693  0.015556685 3.0
##      pip fruit}            => {tropical fruit}    0.005287239  0.2512077  0.021047280 3.0
## [161] {pip fruit,         => {pip fruit}        0.006405694  0.3559322  0.017996950 3.0
##      tropical fruit}       => {pip fruit}        0.006405694  0.2187500  0.029283172 2.0
## [162] {citrus fruit,      => {tropical fruit}    0.009456024  0.3618677  0.026131164 3.0
##      tropical fruit}       => {pip fruit}        0.009456024  0.2634561  0.035892222 3.0
## [163] {other vegetables, => {pip fruit}        0.008439248  0.2804054  0.030096594 2.0
##      pip fruit}             => {tropical fruit}    0.008439248  0.1995192  0.042297916 2.0
## [164] {citrus fruit,      => {pip fruit}        0.005287239  0.2937853  0.017996950 2.0
##      other vegetables}     => {root vegetables}  0.005287239  0.2047244  0.025826131 2.0
## [165] {pip fruit,         => {pip fruit}        0.008134215  0.5228758  0.015556685 2.0
##      root vegetables}      => {other vegetables}  0.008134215  0.3112840  0.026131164 2.0
## [166] {root vegetables,  => {root vegetables}  0.008947636  0.2972973  0.030096594 2.0
##      tropical fruit}        => {root vegetables}  0.005897306  0.5370370  0.010981190 2.0
## [167] {pip fruit,         => {other vegetables}  0.005693950  0.2857143  0.019928826 2.0
##      yogurt}               => {root vegetables}  0.005693950  0.3218391  0.017691917 3.0
## [168] {tropical fruit,   => {tropical fruit}    0.005693950  0.1995192  0.042297916 2.0
##      yogurt}              => {pip fruit}        0.005287239  0.1995192  0.042297916 2.0
## [169] {other vegetables, => {tropical fruit}    0.009456024  0.3618677  0.026131164 3.0
##      pip fruit}             => {pip fruit}        0.009456024  0.2634561  0.035892222 3.0
## [170] {other vegetables, => {pip fruit}        0.008439248  0.2804054  0.030096594 2.0
##      tropical fruit}        => {tropical fruit}    0.008439248  0.1995192  0.042297916 2.0
## [171] {pip fruit,         => {tropical fruit}    0.005287239  0.2937853  0.017996950 2.0
##      whole milk}            => {pip fruit}        0.005287239  0.2047244  0.025826131 2.0
## [172] {tropical fruit,   => {pip fruit}        0.008134215  0.5228758  0.015556685 2.0
##      whole milk}             => {root vegetables}  0.008134215  0.3112840  0.026131164 2.0
## [173] {pip fruit,         => {root vegetables}  0.008947636  0.2972973  0.030096594 2.0
##      yogurt}               => {pip fruit}        0.005897306  0.5370370  0.010981190 2.0
## [174] {root vegetables,  => {root vegetables}  0.005693950  0.2857143  0.019928826 2.0
##      yogurt}              => {pip fruit}        0.005287239  0.3218391  0.017691917 3.0
## [175] {pip fruit,         => {other vegetables}  0.008134215  0.5228758  0.015556685 2.0
##      root vegetables}      => {root vegetables}  0.008134215  0.3112840  0.026131164 2.0
## [176] {other vegetables, => {root vegetables}  0.008947636  0.2972973  0.030096594 2.0
##      pip fruit}             => {root vegetables}  0.005897306  0.5370370  0.010981190 2.0
## [177] {pip fruit,         => {root vegetables}  0.005693950  0.2857143  0.019928826 2.0
##      whole milk}            => {other vegetables}  0.005693950  0.3218391  0.017691917 3.0
## [178] {pastry,             => {other vegetables}  0.005897306  0.5370370  0.010981190 2.0
##      root vegetables}       => {root vegetables}  0.005693950  0.2857143  0.019928826 2.0
## [179] {citrus fruit,       => {root vegetables}  0.005693950  0.3218391  0.017691917 3.0
##      tropical fruit}        => {tropical fruit}    0.005693950  0.1995192  0.042297916 2.0
## [180] {citrus fruit,       => {tropical fruit}    0.005693950  0.2857143  0.019928826 2.0
##      root vegetables}       => {root vegetables}  0.005693950  0.3218391  0.017691917 3.0
## [181] {root vegetables,

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##      tropical fruit} => {citrus fruit} 0.005693950 0.2705314 0.021047280 3.1
## [182] {citrus fruit, => {tropical fruit} 0.006304016 0.2910798 0.021657346 2.1
##      yogurt} => {citrus fruit} 0.006304016 0.2152778 0.029283172 2.0
## [183] {tropical fruit, => {tropical fruit} 0.009049314 0.3133803 0.028876462 2.0
##      yogurt} => {citrus fruit} 0.009049314 0.2521246 0.035892222 3.0
## [184] {citrus fruit, => {tropical fruit} 0.009049314 0.2966667 0.030503305 2.3
##      other vegetables} => {citrus fruit} 0.009049314 0.2139423 0.042297916 2.9
## [185] {other vegetables, => {tropical fruit} 0.010371124 0.5862069 0.017691917 3.0
##      tropical fruit} => {other vegetables} 0.010371124 0.3591549 0.028876462 3.2
## [186] {citrus fruit, => {root vegetables} 0.010371124 0.2188841 0.047381800 2.0
##      whole milk} => {citrus fruit} 0.009150991 0.3000000 0.030503305 2.1
## [187] {tropical fruit, => {root vegetables} 0.005998983 0.3072917 0.019522115 3.1
##      whole milk} => {other vegetables} 0.006609049 0.5158730 0.012811388 2.0
## [188] {citrus fruit, => {citrus fruit} 0.006609049 0.2850877 0.023182511 2.0
##      root vegetables} => {root vegetables} 0.009659380 0.2519894 0.038332486 2.0
## [189] {citrus fruit, => {sausage} 0.007117438 0.3846154 0.018505338 2.1
##      other vegetables} => {yogurt} 0.007117438 0.3097345 0.022979156 2.0
## [190] {other vegetables, => {tropical fruit} 0.007015760 0.2827869 0.024809354 2.0
##      root vegetables} => {root vegetables} 0.008134215 0.3864734 0.021047280 2.0
## [191] {citrus fruit, => {yogurt} 0.008134215 0.2777778 0.029283172 2.0
##      whole milk} => {root vegetables} 0.008134215 0.3149606 0.025826131 3.0
## [192] {rolls/buns, => {tropical fruit} 0.012302999 0.5845411 0.021047280 3.0
##      shopping bags} => {other vegetables} 0.012302999 0.3427762 0.035892222 3.0
## [193] {root vegetables, => {root vegetables} 0.011997966 0.2836538 0.042297916 2.0
##      shopping bags} => {yogurt} 0.008744281 0.3553719 0.024605999 2.0
## [194] {other vegetables, => {tropical fruit} 0.012302999 0.2833724 0.043416370 2.0
##      shopping bags} => {root vegetables} 0.015149975 0.3581731 0.042297916 2.0
## [195] {rolls/buns, => {sausage} 0.009150991 0.3000000 0.030503305 2.1
##      soda} => {yogurt} 0.008134215 0.2777778 0.029283172 2.0
## [196] {bottled water, => {yogurt} 0.007117438 0.3864734 0.021047280 2.0
##      tropical fruit} => {tropical fruit} 0.007117438 0.3097345 0.022979156 2.0
## [197] {bottled water, => {root vegetables} 0.008134215 0.3864734 0.021047280 2.0
##      yogurt} => {yogurt} 0.008134215 0.2777778 0.029283172 2.0
## [198] {bottled water, => {root vegetables} 0.007015760 0.2827869 0.024809354 2.0
##      other vegetables} => {yogurt} 0.008134215 0.3864734 0.021047280 2.0
## [199] {root vegetables, => {tropical fruit} 0.008134215 0.2777778 0.029283172 2.0
##      tropical fruit} => {yogurt} 0.008134215 0.3149606 0.025826131 3.0
## [200] {tropical fruit, => {root vegetables} 0.012302999 0.5845411 0.021047280 3.0
##      yogurt} => {tropical fruit} 0.012302999 0.3427762 0.035892222 3.0
## [201] {root vegetables, => {tropical fruit} 0.011997966 0.2836538 0.042297916 2.0
##      yogurt} => {other vegetables} 0.012302999 0.3553719 0.024605999 2.0
## [202] {root vegetables, => {root vegetables} 0.008744281 0.3553719 0.024605999 2.0
##      tropical fruit} => {yogurt} 0.012302999 0.2833724 0.043416370 2.0
## [203] {other vegetables, => {root vegetables} 0.015149975 0.3581731 0.042297916 2.0
##      tropical fruit} => {tropical fruit} 0.015149975 0.3149606 0.025826131 3.0
## [204] {tropical fruit, => {yogurt} 0.012302999 0.3553719 0.024605999 2.0
##      whole milk} => {root vegetables} 0.011997966 0.2836538 0.042297916 2.0
## [205] {rolls/buns, => {yogurt} 0.008744281 0.3553719 0.024605999 2.0
##      tropical fruit} => {tropical fruit} 0.012302999 0.2833724 0.043416370 2.0
## [206] {other vegetables, => {yogurt} 0.012302999 0.3581731 0.042297916 2.0
##      yogurt} => {tropical fruit} 0.012302999 0.3149606 0.025826131 3.0
## [207] {tropical fruit, => {yogurt} 0.015149975 0.3581731 0.042297916 2.0
##      whole milk} => {yogurt} 0.015149975 0.3149606 0.025826131 3.0
## [208] {whole milk,

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## yogurt}	=> {tropical fruit}	0.015149975	0.2704174	0.056024403	2.1
## [209] {root vegetables, ## yogurt}	=> {other vegetables}	0.012913066	0.5000000	0.025826131	2.1
## [210] {other vegetables, ## yogurt}	=> {root vegetables}	0.012913066	0.2974239	0.043416370	2.1
## [211] {rolls/buns, ## root vegetables}	=> {other vegetables}	0.012201322	0.5020921	0.024300966	2.1
## [212] {other vegetables, ## rolls/buns}	=> {root vegetables}	0.012201322	0.2863962	0.042602949	2.1
## [213] {other vegetables, ## whole milk}	=> {root vegetables}	0.023182511	0.3097826	0.074834774	2.1
## [214] {fruit/vegetable juice, ## whole milk, ## yogurt}	=> {other vegetables}	0.005083884	0.5376344	0.009456024	2.1
## [215] {fruit/vegetable juice, ## other vegetables, ## whole milk}	=> {yogurt}	0.005083884	0.4854369	0.010472801	3.1
## [216] {other vegetables, ## whole milk, ## yogurt}	=> {fruit/vegetable juice}	0.005083884	0.2283105	0.022267412	3.1
## [217] {root vegetables, ## whipped/sour cream, ## whole milk}	=> {other vegetables}	0.005185562	0.5483871	0.009456024	2.8
## [218] {other vegetables, ## whipped/sour cream, ## whole milk}	=> {root vegetables}	0.005185562	0.3541667	0.014641586	3.1
## [219] {other vegetables, ## root vegetables, ## whole milk}	=> {whipped/sour cream}	0.005185562	0.2236842	0.023182511	3.1
## [220] {whipped/sour cream, ## whole milk, ## yogurt}	=> {other vegetables}	0.005592272	0.5140187	0.010879512	2.0
## [221] {other vegetables, ## whipped/sour cream, ## whole milk}	=> {yogurt}	0.005592272	0.3819444	0.014641586	2.1
## [222] {other vegetables, ## whole milk, ## yogurt}	=> {whipped/sour cream}	0.005592272	0.2511416	0.022267412	3.1
## [223] {other vegetables, ## pip fruit, ## root vegetables}	=> {whole milk}	0.005490595	0.6750000	0.008134215	2.1
## [224] {pip fruit, ## root vegetables, ## whole milk}	=> {other vegetables}	0.005490595	0.6136364	0.008947636	3.1
## [225] {other vegetables, ## pip fruit, ## whole milk}	=> {root vegetables}	0.005490595	0.4060150	0.013523132	3.1
## [226] {other vegetables, ## root vegetables, ## whole milk}	=> {pip fruit}	0.005490595	0.2368421	0.023182511	3.1
## [227] {pip fruit, ## whole milk, ## yogurt}	=> {other vegetables}	0.005083884	0.5319149	0.009557702	2.1
## [228] {other vegetables,					

```

##      pip fruit,
##      whole milk}          => {yogurt}          0.005083884  0.3759398 0.013523132 2.0
## [229] {other vegetables,
##         whole milk,
##         yogurt}           => {pip fruit}        0.005083884  0.2283105 0.022267412 3.0
## [230] {citrus fruit,
##         root vegetables,
##         whole milk}        => {other vegetables} 0.005795628  0.6333333 0.009150991 3.0
## [231] {citrus fruit,
##         other vegetables,
##         whole milk}        => {root vegetables} 0.005795628  0.4453125 0.013014743 4.0
## [232] {other vegetables,
##         root vegetables,
##         whole milk}        => {citrus fruit}       0.005795628  0.2500000 0.023182511 3.0
## [233] {root vegetables,
##         tropical fruit,
##         yogurt}            => {whole milk}        0.005693950  0.7000000 0.008134215 2.0
## [234] {root vegetables,
##         tropical fruit,
##         whole milk}        => {yogurt}           0.005693950  0.4745763 0.011997966 3.0
## [235] {tropical fruit,
##         whole milk,
##         yogurt}             => {root vegetables} 0.005693950  0.3758389 0.015149975 3.0
## [236] {root vegetables,
##         whole milk,
##         yogurt}             => {tropical fruit}    0.005693950  0.3916084 0.014539908 3.0
## [237] {root vegetables,
##         tropical fruit,
##         whole milk}        => {other vegetables} 0.007015760  0.5847458 0.011997966 3.0
## [238] {other vegetables,
##         tropical fruit,
##         whole milk}        => {root vegetables} 0.007015760  0.4107143 0.017081851 3.0
## [239] {other vegetables,
##         root vegetables,
##         whole milk}        => {tropical fruit}    0.007015760  0.3026316 0.023182511 2.8
## [240] {tropical fruit,
##         whole milk,
##         yogurt}             => {other vegetables} 0.007625826  0.5033557 0.015149975 2.0
## [241] {other vegetables,
##         tropical fruit,
##         whole milk}        => {yogurt}           0.007625826  0.4464286 0.017081851 3.0
## [242] {other vegetables,
##         whole milk,
##         yogurt}             => {tropical fruit}    0.007625826  0.3424658 0.022267412 3.0
## [243] {root vegetables,
##         whole milk,
##         yogurt}             => {other vegetables} 0.007829181  0.5384615 0.014539908 2.0
## [244] {other vegetables,
##         whole milk,
##         yogurt}             => {root vegetables} 0.007829181  0.3515982 0.022267412 3.0
## [245] {rolls/buns,
##         root vegetables,
##         whole milk}        => {other vegetables} 0.006202339  0.4880000 0.012709710 2.0
## [246] {other vegetables,

```

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##      rolls/buns,
##      whole milk}          => {root vegetables}      0.006202339  0.3465909  0.017895272 3.1
inspect(subset(groceries_rule, subset=confidence > 0.4))

##      lhs                                rhs
## [1]  {cake bar}           => {whole milk}        0.005592272  0.4230769  0.013218099 1.655775
## [2]  {mustard}            => {whole milk}        0.005185562  0.4322034  0.011997966 1.691492
## [3]  {pasta}               => {whole milk}        0.006100661  0.4054054  0.015048297 1.586614
## [4]  {herbs}               => {root vegetables} 0.007015760  0.4312500  0.016268429 3.956477
## [5]  {herbs}               => {other vegetables} 0.007727504  0.4750000  0.016268429 2.454874
## [6]  {herbs}               => {whole milk}        0.007727504  0.4750000  0.016268429 1.858983
## [7]  {processed cheese}   => {whole milk}        0.007015760  0.4233129  0.016573462 1.656698
## [8]  {semi-finished bread}=> {whole milk}        0.007117438  0.4022989  0.017691917 1.574457
## [9]  {detergent}           => {whole milk}        0.008947636  0.4656085  0.019217082 1.822228
## [10] {baking powder}      => {other vegetables} 0.007320793  0.4137931  0.017691917 2.138547
## [11] {baking powder}      => {whole milk}        0.009252669  0.5229885  0.017691917 2.046793
## [12] {flour}               => {whole milk}        0.008439248  0.4853801  0.017386884 1.899607
## [13] {soft cheese}        => {other vegetables} 0.007117438  0.4166667  0.017081851 2.153398
## [14] {soft cheese}        => {whole milk}        0.007524148  0.4404762  0.017081851 1.723869
## [15] {grapes}              => {other vegetables} 0.009049314  0.4045455  0.022369090 2.090754
## [16] {hard cheese}         => {whole milk}        0.010066090  0.4107884  0.024504321 1.607682
## [17] {butter milk}         => {whole milk}        0.011591256  0.4145455  0.027961362 1.622385
## [18] {ham}                 => {whole milk}        0.011489578  0.4414062  0.026029487 1.727509
## [19] {sliced cheese}       => {whole milk}        0.010777834  0.4398340  0.024504321 1.721356
## [20] {oil}                 => {whole milk}        0.011286223  0.4021739  0.028063040 1.573968
## [21] {onions}              => {other vegetables} 0.014234875  0.4590164  0.031011693 2.372268
## [22] {hamburger meat}     => {other vegetables} 0.013828165  0.4159021  0.033248602 2.149447
## [23] {hamburger meat}     => {whole milk}        0.014743264  0.4434251  0.033248602 1.735410
## [24] {sugar}               => {whole milk}        0.015048297  0.4444444  0.033858668 1.739400
## [25] {cream cheese}       => {whole milk}        0.016471784  0.4153846  0.039654296 1.625670
## [26] {chicken}             => {other vegetables} 0.017895272  0.4170616  0.042907982 2.155439
## [27] {chicken}             => {whole milk}        0.017590239  0.4099526  0.042907982 1.604411
## [28] {white bread}         => {whole milk}        0.017081851  0.4057971  0.042094560 1.588147
## [29] {frozen vegetables}  => {whole milk}        0.020437214  0.4249471  0.048093543 1.663094
## [30] {beef}                => {whole milk}        0.021250635  0.4050388  0.052465684 1.585180
## [31] {curd}                => {whole milk}        0.026131164  0.4904580  0.053279105 1.919481
## [32] {margarine}           => {whole milk}        0.024199288  0.4131944  0.058566345 1.617098
## [33] {butter}               => {whole milk}        0.027554652  0.4972477  0.055414337 1.946053
## [34] {domestic eggs}       => {whole milk}        0.029994916  0.4727564  0.063446873 1.850203
## [35] {whipped/sour cream}  => {other vegetables} 0.028876462  0.4028369  0.071682766 2.081924
## [36] {whipped/sour cream}  => {whole milk}        0.032231825  0.4496454  0.071682766 1.759754
## [37] {tropical fruit}      => {whole milk}        0.042297916  0.4031008  0.104931368 1.577595
## [38] {root vegetables}     => {other vegetables} 0.047381800  0.4347015  0.108998475 2.246605
## [39] {root vegetables}     => {whole milk}        0.048906965  0.4486940  0.108998475 1.756031
## [40] {yogurt}               => {whole milk}        0.056024403  0.4016035  0.139501779 1.571735
## [41] {oil,
##      other vegetables}    => {whole milk}        0.005083884  0.5102041  0.009964413 1.996760
## [42] {oil,
##      whole milk}           => {other vegetables} 0.005083884  0.4504505  0.011286223 2.327998
## [43] {onions,
##      root vegetables}     => {other vegetables} 0.005693950  0.6021505  0.009456024 3.112008
## [44] {onions,
##      other vegetables}    => {whole milk}        0.006609049  0.4642857  0.014234875 1.817051
## [45] {onions,

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##      whole milk}          => {other vegetables} 0.006609049  0.5462185 0.012099644 2.822942
## [46] {hamburger meat,    => {whole milk}        0.006304016  0.4558824 0.013828165 1.784164
##      other vegetables}   => {other vegetables} 0.006304016  0.4275862 0.014743264 2.209832
## [47] {hamburger meat,    => {whole milk}        0.005185562  0.5425532 0.009557702 2.123363
##      whole milk}          => {other vegetables} 0.005185562  0.4047619 0.012811388 2.091872
## [48] {hygiene articles,  => {whole milk}        0.006304016  0.5849057 0.010777834 2.289115
##      other vegetables}   => {other vegetables} 0.006304016  0.4189189 0.015048297 2.165038
## [49] {hygiene articles,  => {whole milk}        0.005693950  0.5333333 0.010676157 2.087279
##      whole milk}          => {other vegetables} 0.005693950  0.4210526 0.013523132 2.176065
## [50] {other vegetables,  => {other vegetables} 0.005287239  0.4262295 0.012404677 2.202820
##      sugar}               => {whole milk}        0.006609049  0.5327869 0.012404677 2.085141
## [51] {sugar,              => {yogurt}           0.006609049  0.4012346 0.016471784 2.876197
##      whole milk}          => {whole milk}        0.006710727  0.4888889 0.013726487 1.913340
## [52] {long life bakery product,  => {other vegetables} 0.006710727  0.4074074 0.016471784 2.105545
##      other vegetables}   => {whole milk}        0.005693950  0.5233645 0.010879512 2.704829
## [53] {long life bakery product,  => {other vegetables} 0.005693950  0.5514019 0.010879512 2.157993
##      whole milk}          => {whole milk}        0.005287239  0.5473684 0.009659380 2.142208
## [54] {cream cheese,       => {whole milk}        0.008439248  0.4715909 0.017895272 1.845641
##      yogurt}              => {other vegetables} 0.008439248  0.4797688 0.017590239 2.479520
## [55] {cream cheese,       => {whole milk}        0.005897306  0.4296296 0.013726487 1.681420
##      yogurt}              => {whole milk}        0.005490595  0.4320000 0.012709710 1.690696
## [56] {cream cheese,       => {whole milk}        0.005083884  0.5208333 0.009761057 2.038359
##      whole milk}          => {other vegetables} 0.006405694  0.4772727 0.013421454 1.867878
## [57] {cream cheese,       => {other vegetables} 0.006100661  0.5263158 0.011591256 2.720082
##      other vegetables}   => {whole milk}        0.006202339  0.5350877 0.011591256 2.094146
## [58] {cream cheese,       => {other vegetables} 0.005287239  0.4262295 0.012404677 2.202820
##      whole milk}          => {whole milk}        0.006100661  0.4918033 0.012404677 1.924745
## [59] {chicken,             => {other vegetables} 0.006100661  0.4918033 0.012404677 1.924745
##      root vegetables}   => {whole milk}        0.005998983  0.5514019 0.010879512 2.157993
## [60] {chicken,             => {whole milk}        0.005287239  0.5473684 0.009659380 2.142208
##      root vegetables}   => {whole milk}        0.006609049  0.5327869 0.012404677 2.085141
## [61] {chicken,             => {whole milk}        0.006710727  0.4888889 0.013726487 1.913340
##      rolls/buns}          => {other vegetables} 0.006710727  0.4074074 0.016471784 2.105545
## [62] {chicken,             => {whole milk}        0.005693950  0.5233645 0.010879512 2.704829
##      other vegetables}   => {whole milk}        0.005287239  0.5473684 0.009659380 2.142208
## [63] {chicken,             => {whole milk}        0.008439248  0.4715909 0.017895272 1.845641
##      whole milk}          => {other vegetables} 0.008439248  0.4797688 0.017590239 2.479520
## [64] {other vegetables,   => {whole milk}        0.005897306  0.4296296 0.013726487 1.681420
##      white bread}         => {whole milk}        0.005490595  0.4320000 0.012709710 1.690696
## [65] {chocolate,            => {whole milk}        0.005083884  0.5208333 0.009761057 2.038359
##      other vegetables}   => {other vegetables} 0.006405694  0.4772727 0.013421454 1.867878
## [66] {coffee,               => {whole milk}        0.006100661  0.5263158 0.011591256 2.720082
##      yogurt}              => {whole milk}        0.006202339  0.5350877 0.011591256 2.094146
## [67] {coffee,               => {other vegetables} 0.005287239  0.4262295 0.012404677 2.202820
##      other vegetables}   => {whole milk}        0.006100661  0.4918033 0.012404677 1.924745
## [68] {frozen vegetables,   => {other vegetables} 0.006100661  0.5263158 0.011591256 2.720082
##      root vegetables}   => {whole milk}        0.006202339  0.5350877 0.011591256 2.094146
## [69] {frozen vegetables,   => {other vegetables} 0.005287239  0.4262295 0.012404677 2.202820
##      root vegetables}   => {whole milk}        0.006100661  0.4918033 0.012404677 1.924745
## [70] {frozen vegetables,   => {other vegetables} 0.006100661  0.5263158 0.011591256 2.720082
##      yogurt}              => {whole milk}        0.006202339  0.5350877 0.011591256 2.094146
## [71] {frozen vegetables,   => {other vegetables} 0.005287239  0.4262295 0.012404677 2.202820
##      yogurt}              => {whole milk}        0.006100661  0.4918033 0.012404677 1.924745
## [72] {frozen vegetables,

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##      rolls/buns}          => {whole milk}      0.005083884 0.5000000 0.010167768 1.956825
## [73] {frozen vegetables, => {whole milk}      0.009659380 0.5428571 0.017793594 2.124552
##      other vegetables}    => {other vegetables} 0.009659380 0.4726368 0.020437214 2.442661
## [74] {frozen vegetables, => {other vegetables} 0.007930859 0.4561404 0.017386884 2.357404
##      whole milk}          => {root vegetables} 0.007930859 0.4020619 0.019725470 3.688692
## [75] {beef,                => {whole milk}      0.008032537 0.4619883 0.017386884 1.808060
##      root vegetables}     => {other vegetables} 0.005185562 0.4434783 0.011692933 2.291965
## [76] {beef,                => {whole milk}      0.006100661 0.5217391 0.011692933 2.041904
##      other vegetables}    => {other vegetables} 0.005795628 0.4253731 0.013624809 2.198395
## [77] {beef,                => {whole milk}      0.006812405 0.5000000 0.013624809 1.956825
##      root vegetables}     => {whole milk}      0.009252669 0.4690722 0.019725470 1.835784
## [78] {beef,                => {other vegetables} 0.009252669 0.4354067 0.021250635 2.250250
##      yogurt}              => {whole milk}      0.005897306 0.5631068 0.010472801 2.203802
## [79] {beef,                => {yogurt}          0.005287239 0.5148515 0.010269446 3.690645
##      yogurt}              => {other vegetables} 0.005287239 0.5148515 0.010269446 2.660833
## [80] {beef,                => {whole milk}      0.006507372 0.6336634 0.010269446 2.479936
##      rolls/buns}           => {other vegetables} 0.005490595 0.5046729 0.010879512 2.608228
## [81] {beef,                => {whole milk}      0.006202339 0.5700935 0.010879512 2.231146
##      rolls/buns}           => {whole milk}      0.010066090 0.5823529 0.017285206 2.279125
## [82] {beef,                => {whole milk}      0.005897306 0.5858586 0.010066090 2.292845
##      other vegetables}    => {whole milk}      0.009862735 0.5739645 0.017183528 2.246296
## [83] {beef,                => {whole milk}      0.006100661 0.4958678 0.012302999 1.940652
##      whole milk}           => {whole milk}      0.005287239 0.4521739 0.011692933 1.769650
## [84] {curd,                => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
##      whipped/sour cream}  => {other vegetables} 0.007015760 0.5149254 0.013624809 2.661214
## [85] {curd,                => {whole milk}      0.006100661 0.4958678 0.012302999 1.940652
##      tropical fruit}      => {other vegetables} 0.005287239 0.4521739 0.011692933 1.769650
## [86] {curd,                => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
##      tropical fruit}      => {other vegetables} 0.005287239 0.4521739 0.011692933 1.769650
## [87] {curd,                => {whole milk}      0.006507372 0.6336634 0.010269446 2.479936
##      tropical fruit}      => {other vegetables} 0.005490595 0.5046729 0.010879512 2.608228
## [88] {curd,                => {whole milk}      0.006202339 0.5700935 0.010879512 2.231146
##      root vegetables}     => {whole milk}      0.010066090 0.5823529 0.017285206 2.279125
## [89] {curd,                => {whole milk}      0.005897306 0.5858586 0.010066090 2.292845
##      root vegetables}     => {whole milk}      0.009862735 0.5739645 0.017183528 2.246296
## [90] {curd,                => {whole milk}      0.006100661 0.4958678 0.012302999 1.940652
##      yogurt}              => {whole milk}      0.005287239 0.4521739 0.011692933 1.769650
## [91] {curd,                => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
##      rolls/buns}           => {whole milk}      0.005287239 0.4521739 0.011692933 1.769650
## [92] {curd,                => {whole milk}      0.006507372 0.6336634 0.010269446 2.479936
##      other vegetables}    => {whole milk}      0.009862735 0.5739645 0.017183528 2.246296
## [93] {napkins,              => {whole milk}      0.006100661 0.4958678 0.012302999 1.940652
##      yogurt}              => {whole milk}      0.005287239 0.4521739 0.011692933 1.769650
## [94] {napkins,              => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
##      rolls/buns}           => {whole milk}      0.005287239 0.4521739 0.011692933 1.769650
## [95] {napkins,              => {whole milk}      0.006100661 0.4958678 0.012302999 1.940652
##      other vegetables}    => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
## [96] {pork,                 => {other vegetables} 0.007015760 0.5149254 0.013624809 2.661214
##      root vegetables}     => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
## [97] {pork,                 => {other vegetables} 0.007015760 0.5149254 0.013624809 2.661214
##      root vegetables}     => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
## [98] {pork,                 => {other vegetables} 0.005592272 0.4954955 0.011286223 2.560798
##      rolls/buns}           => {whole milk}      0.006812405 0.4718310 0.014438231 1.846581
## [99] {pork,                 => {other vegetables} 0.005592272 0.4954955 0.011286223 2.560798

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##      rolls/buns}          => {whole milk}        0.006202339  0.5495495  0.011286223  2.150744
## [100] {other vegetables, => {whole milk}        0.010167768  0.4694836  0.021657346  1.837394
##      pork}                => {other vegetables} 0.010167768  0.4587156  0.022165735  2.370714
## [101] {pork,              => {whole milk}        0.005185562  0.5483871  0.009456024  2.146195
##      whole milk}           => {whole milk}        0.005083884  0.5000000  0.010167768  1.956825
## [102] {frankfurter,       => {whole milk}        0.006202339  0.5545455  0.011184545  2.170296
##      tropical fruit}      => {whole milk}        0.007625826  0.4629630  0.016471784  1.811875
## [103] {frankfurter,       => {whole milk}        0.005185562  0.5604396  0.009252669  2.193364
##      root vegetables}     => {whole milk}        0.007625826  0.4716981  0.016166751  1.846061
## [104] {frankfurter,       => {whole milk}        0.005693950  0.5333333  0.010676157  2.087279
##      yogurt}               => {whole milk}        0.005693950  0.5600000  0.010167768  2.191643
## [105] {frankfurter,       => {whole milk}        0.005083884  0.4032258  0.012608033  1.578084
##      other vegetables}    => {whole milk}        0.007117438  0.4895105  0.014539908  1.915772
## [106] {bottled beer,      => {whole milk}        0.005287239  0.4193548  0.012608033  1.641208
##      yogurt}               => {whole milk}        0.009354347  0.5000000  0.018708693  1.956825
## [107] {bottled beer,      => {whole milk}        0.005185562  0.6219512  0.008337570  2.434099
##      other vegetables}    => {other vegetables} 0.005897306  0.5321101  0.011082867  2.750028
## [108] {brown bread,       => {whole milk}        0.007015760  0.4928571  0.014234875  1.928870
##      tropical fruit}      => {whole milk}        0.007930859  0.5379310  0.014743264  2.105273
## [109] {brown bread,       => {whole milk}        0.009252669  0.4690722  0.019725470  1.835784
##      root vegetables}     => {whole milk}        0.005998983  0.6210526  0.009659380  2.430582
## [110] {brown bread,       => {whole milk}        0.005795628  0.5700000  0.010167768  2.945849
##      soda}                 => {whole milk}        0.006710727  0.6600000  0.010167768  2.583008
## [111] {brown bread,       => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      yogurt}               => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
## [112] {brown bread,       => {other vegetables} 0.005490595  0.5510204  0.009964413  2.847759
##      rolls/buns}           => {whole milk}        0.006202339  0.6224490  0.009964413  2.436047
## [113] {brown bread,       => {whole milk}        0.006202339  0.5495495  0.011286223  2.150744
##      other vegetables}    => {whole milk}        0.005693950  0.5600000  0.010167768  1.956825
## [114] {domestic eggs,     => {whole milk}        0.005185562  0.6219512  0.008337570  2.434099
##      margarine}            => {whole milk}        0.007625826  0.4716981  0.016166751  1.846061
## [115] {margarine,         => {whole milk}        0.005693950  0.5333333  0.010676157  2.087279
##      root vegetables}     => {whole milk}        0.005083884  0.4032258  0.012608033  1.578084
## [116] {margarine,         => {whole milk}        0.007930859  0.5379310  0.014743264  2.105273
##      yogurt}               => {whole milk}        0.009252669  0.4690722  0.019725470  1.835784
## [117] {margarine,         => {whole milk}        0.005998983  0.6210526  0.009659380  2.430582
##      rolls/buns}           => {whole milk}        0.005795628  0.5700000  0.010167768  2.945849
## [118] {margarine,         => {whole milk}        0.006710727  0.6600000  0.010167768  2.583008
##      other vegetables}    => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
## [119] {butter,              => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
##      domestic eggs}        => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
## [120] {butter,              => {other vegetables} 0.005490595  0.5510204  0.009964413  2.847759
##      whipped/sour cream}   => {whole milk}        0.006202339  0.6224490  0.009964413  2.436047
## [121] {butter,              => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      whipped/sour cream}   => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
## [122] {butter,              => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      citrus fruit}         => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
## [123] {bottled water,       => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      butter}                => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
## [124] {butter,              => {other vegetables} 0.005490595  0.5510204  0.009964413  2.847759
##      tropical fruit}        => {whole milk}        0.006202339  0.6224490  0.009964413  2.436047
## [125] {butter,              => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      tropical fruit}        => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084
## [126] {butter,              => {whole milk}        0.005083884  0.5555556  0.009150991  2.174249
##      tropical fruit}        => {whole milk}        0.005388917  0.6022727  0.008947636  2.357084

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##      root vegetables} => {other vegetables} 0.006609049 0.5118110 0.012913066 2.645119
## [127] {butter,      => {whole milk}      0.008235892 0.6377953 0.012913066 2.496107
##      root vegetables} => {other vegetables} 0.006405694 0.4375000 0.014641586 2.261068
## [128] {butter,      => {whole milk}      0.009354347 0.6388889 0.014641586 2.500387
##      yogurt}        => {other vegetables} 0.005693950 0.4242424 0.013421454 2.192551
## [129] {butter,      => {whole milk}      0.006609049 0.4924242 0.013421454 1.927176
##      yogurt}        => {whole milk}      0.011489578 0.5736041 0.020030503 2.244885
## [130] {butter,      => {other vegetables} 0.011489578 0.4169742 0.027554652 2.154987
##      rolls/buns}    => {whole milk}      0.005083884 0.4310345 0.011794611 1.686918
## [131] {butter,      => {other vegetables} 0.005998983 0.5221239 0.011489578 2.698417
##      rolls/buns}    => {whole milk}      0.005795628 0.5044248 0.011489578 1.974142
## [132] {butter,      => {whole milk}      0.006609049 0.4304636 0.015353330 1.684683
##      other vegetables} => {whole milk}      0.008337570 0.4315789 0.019318760 1.689049
## [133] {butter,      => {other vegetables} 0.005083884 0.5102041 0.009964413 2.636814
##      whole milk}     => {whole milk}      0.005693950 0.5714286 0.009964413 2.236371
## [134] {newspapers, => {other vegetables} 0.005693950 0.5490196 0.010371124 2.148670
##      tropical fruit} => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
## [135] {newspapers, => {whole milk}      0.007320793 0.5106383 0.014336553 2.639058
##      root vegetables} => {whole milk}      0.008540925 0.5957447 0.014336553 2.331536
## [136] {newspapers, => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
##      root vegetables} => {whole milk}      0.005185562 0.4180328 0.012404677 1.636034
## [137] {newspapers, => {other vegetables} 0.005795628 0.4042553 0.014336553 2.089254
##      yogurt}        => {whole milk}      0.007727504 0.5390071 0.014336553 2.109485
## [138] {newspapers, => {whole milk}      0.006609049 0.4220779 0.015658363 1.651865
##      other vegetables} => {whole milk}      0.012302999 0.5525114 0.022267412 2.162336
## [139] {domestic eggs, => {whole milk}      0.012302999 0.4101695 0.029994916 2.119820
##      whipped/sour cream} => {other vegetables} 0.005693950 0.5490196 0.010371124 2.148670
## [140] {domestic eggs, => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
##      whipped/sour cream} => {whole milk}      0.007320793 0.5106383 0.014336553 2.639058
## [141] {domestic eggs, => {whole milk}      0.008540925 0.5957447 0.014336553 2.331536
##      pip fruit}       => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
## [142] {citrus fruit, => {whole milk}      0.005185562 0.4180328 0.012404677 1.636034
##      domestic eggs}   => {other vegetables} 0.005795628 0.4042553 0.014336553 2.089254
## [143] {domestic eggs, => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
##      tropical fruit}  => {whole milk}      0.007727504 0.5390071 0.014336553 2.109485
## [144] {domestic eggs, => {whole milk}      0.008540925 0.5957447 0.014336553 2.331536
##      root vegetables} => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
## [145] {domestic eggs, => {whole milk}      0.005185562 0.4180328 0.012404677 1.636034
##      root vegetables} => {other vegetables} 0.005795628 0.4042553 0.014336553 2.089254
## [146] {domestic eggs, => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
##      soda}            => {whole milk}      0.007727504 0.5390071 0.014336553 2.109485
## [147] {domestic eggs, => {whole milk}      0.008540925 0.5957447 0.014336553 2.331536
##      soda}            => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
## [148] {domestic eggs, => {whole milk}      0.005185562 0.4180328 0.012404677 1.636034
##      yogurt}          => {other vegetables} 0.005795628 0.4042553 0.014336553 2.089254
## [149] {domestic eggs, => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
##      yogurt}          => {whole milk}      0.007727504 0.5390071 0.014336553 2.109485
## [150] {domestic eggs, => {whole milk}      0.008540925 0.5957447 0.014336553 2.331536
##      rolls/buns}       => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
## [151] {domestic eggs, => {whole milk}      0.005185562 0.4180328 0.012404677 1.636034
##      other vegetables} => {whole milk}      0.005795628 0.4042553 0.014336553 2.089254
## [152] {domestic eggs, => {whole milk}      0.006914082 0.6071429 0.011387900 2.376144
##      whole milk}       => {other vegetables} 0.005083884 0.4098361 0.012404677 2.118097
## [153] {bottled water,

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##      fruit/vegetable juice}          => {whole milk}      0.005795628  0.4071429 0.014234875 1.593414
## [154] {fruit/vegetable juice,      => {other vegetables} 0.006609049  0.4814815 0.013726487 2.488371
##      tropical fruit}              => {whole milk}      0.005998983  0.4370370 0.013726487 1.710410
## [155] {fruit/vegetable juice,      => {other vegetables} 0.006609049  0.5508475 0.011997966 2.846865
##      tropical fruit}              => {whole milk}      0.006507372  0.5423729 0.011997966 2.122657
## [156] {fruit/vegetable juice,      => {other vegetables} 0.008235892  0.4402174 0.018708693 2.275112
##      root vegetables}            => {whole milk}      0.009456024  0.5054348 0.018708693 1.978094
## [157] {fruit/vegetable juice,      => {whole milk}      0.010472801  0.4975845 0.021047280 1.947371
##      root vegetables}            => {other vegetables} 0.005592272  0.6043956 0.009252669 3.123610
## [158] {fruit/vegetable juice,      => {whole milk}      0.005998983  0.6483516 0.009252669 2.537421
##      yogurt}                    => {other vegetables} 0.005693950  0.5233645 0.010879512 2.704829
## [159] {fruit/vegetable juice,      => {whole milk}      0.006304016  0.5794393 0.010879512 2.267722
##      yogurt}                    => {whole milk}      0.005083884  0.5617978 0.009049314 2.198679
## [160] {fruit/vegetable juice,      => {yogurt}          0.006202339  0.4485294 0.013828165 3.215224
##      other vegetables}           => {other vegetables} 0.007829181  0.5661765 0.013828165 2.926088
## [161] {pip fruit,                => {whole milk}      0.007930859  0.5735294 0.013828165 2.244593
##      whipped/sour cream}         => {other vegetables} 0.008540925  0.5000000 0.017081851 2.584078
## [162] {pip fruit,                => {whole milk}      0.009456024  0.5535714 0.017081851 2.166484
##      whipped/sour cream}         => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
## [163] {citrus fruit,              => {other vegetables} 0.010167768  0.4901961 0.020742247 2.533410
##      whipped/sour cream}         => {whole milk}      0.010879512  0.5245098 0.020742247 2.052747
## [164] {citrus fruit,              => {other vegetables} 0.006710727  0.4583333 0.014641586 2.368738
##      whipped/sour cream}         => {whole milk}      0.007829181  0.5347222 0.014641586 2.092715
## [165] {sausage,                  => {whole milk}      0.014641586  0.5070423 0.028876462 1.984385
##      whipped/sour cream}         => {other vegetables} 0.014641586  0.4542587 0.032231825 2.347679
## [166] {tropical fruit,           => {whole milk}      0.005083884  0.4761905 0.010676157 1.863642
##      whipped/sour cream}         => {tropical fruit}  0.005592272  0.4044118 0.013828165 3.854060
## [167] {tropical fruit,           => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
##      whipped/sour cream}         => {other vegetables} 0.007829181  0.5661765 0.013828165 2.926088
## [168] {tropical fruit,           => {whole milk}      0.007930859  0.5735294 0.013828165 2.244593
##      whipped/sour cream}         => {other vegetables} 0.008540925  0.5000000 0.017081851 2.584078
## [169] {root vegetables,          => {whole milk}      0.009456024  0.5535714 0.017081851 2.166484
##      whipped/sour cream}         => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
## [170] {root vegetables,          => {other vegetables} 0.010167768  0.4901961 0.020742247 2.533410
##      whipped/sour cream}         => {whole milk}      0.010879512  0.5245098 0.020742247 2.052747
## [171] {soda,                      => {whole milk}      0.006710727  0.4583333 0.014641586 2.368738
##      whipped/sour cream}         => {whole milk}      0.007829181  0.5347222 0.014641586 2.092715
## [172] {whipped/sour cream,        => {other vegetables} 0.014641586  0.5070423 0.028876462 1.984385
##      yogurt}                   => {whole milk}      0.010879512  0.5245098 0.020742247 2.052747
## [173] {whipped/sour cream,        => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
##      yogurt}                   => {other vegetables} 0.014641586  0.4542587 0.032231825 2.347679
## [174] {rolls/buns,                => {whole milk}      0.007930859  0.5735294 0.013828165 2.244593
##      whipped/sour cream}         => {other vegetables} 0.008540925  0.5000000 0.017081851 2.584078
## [175] {rolls/buns,                => {whole milk}      0.009456024  0.5535714 0.017081851 2.166484
##      whipped/sour cream}         => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
## [176] {other vegetables,          => {other vegetables} 0.010167768  0.4901961 0.020742247 2.533410
##      whipped/sour cream}         => {whole milk}      0.014641586  0.5070423 0.028876462 1.984385
## [177] {whipped/sour cream,        => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
##      whole milk}                => {other vegetables} 0.014641586  0.4542587 0.032231825 2.347679
## [178] {pastry,                     => {whole milk}      0.007930859  0.5735294 0.013828165 2.244593
##      pip fruit}                 => {whole milk}      0.008540925  0.5000000 0.017081851 2.584078
## [179] {citrus fruit,               => {whole milk}      0.009456024  0.5535714 0.017081851 2.166484
##      pip fruit}                 => {tropical fruit}  0.005592272  0.4044118 0.013828165 3.854060
## [180] {citrus fruit,               => {whole milk}      0.005490595  0.4736842 0.011591256 1.853834
##      pip fruit}                 => {other vegetables} 0.014641586  0.4542587 0.032231825 2.347679

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##      pip fruit}          => {other vegetables} 0.005897306 0.4264706 0.013828165 2.204066
## [181] {pip fruit,       => {whole milk}      0.005592272 0.5188679 0.010777834 2.030667
##      sausage}           => {other vegetables} 0.009456024 0.4626866 0.020437214 2.391236
## [182] {pip fruit,       => {whole milk}      0.008439248 0.4129353 0.020437214 1.616084
##      tropical fruit}    => {other vegetables} 0.008134215 0.5228758 0.015556685 2.702304
## [183] {pip fruit,       => {whole milk}      0.008947636 0.5751634 0.015556685 2.250988
##      tropical fruit}    => {other vegetables} 0.008134215 0.4519774 0.017996950 2.335890
## [184] {pip fruit,       => {whole milk}      0.009557702 0.5310734 0.017996950 2.078435
##      root vegetables}   => {other vegetables} 0.006202339 0.4452555 0.013929842 1.742574
## [185] {pip fruit,       => {whole milk}      0.013523132 0.5175097 0.026131164 2.025351
##      root vegetables}   => {other vegetables} 0.013523132 0.4493243 0.030096594 2.322178
## [186] {pip fruit,       => {whole milk}      0.005693950 0.4552846 0.012506355 1.781824
##      yogurt}            => {whole milk}      0.006710727 0.5076923 0.013218099 1.986930
## [187] {pip fruit,       => {other vegetables} 0.005897306 0.5370370 0.010981190 2.775491
##      yogurt}            => {whole milk}      0.005693950 0.5185185 0.010981190 2.029299
## [188] {pip fruit,       => {whole milk}      0.009150991 0.5172414 0.017691917 2.024301
##      rolls/buns}         => {whole milk}      0.008540925 0.4077670 0.020945602 1.595857
## [189] {other vegetables,=> {other vegetables} 0.010574479 0.4684685 0.022572445 1.833421
##      pip fruit}          => {whole milk}      0.005897306 0.4360902 0.013523132 1.706704
## [190] {pip fruit,       => {other vegetables} 0.009049314 0.4540816 0.019928826 2.346765
##      whole milk}         => {whole milk}      0.009049314 0.4540816 0.019928826 1.777116
## [191] {pastry,          => {other vegetables} 0.010371124 0.5862069 0.017691917 3.029608
##      sausage}            => {whole milk}      0.009150991 0.5172414 0.017691917 2.024301
## [192] {pastry,          => {whole milk}      0.010269446 0.4741784 0.021657346 1.855768
##      tropical fruit}    => {whole milk}      0.007219115 0.4303030 0.016776817 1.684055
## [193] {pastry,          => {whole milk}      0.013014743 0.4507042 0.028876462 1.763898
##      root vegetables}   => {other vegetables} 0.013014743 0.4266667 0.030503305 2.205080
## [194] {pastry,          => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      root vegetables}   => {other vegetables} 0.013014743 0.4266667 0.030503305 2.205080
## [195] {pastry,          => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      yogurt}            => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [196] {pastry,          => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      rolls/buns}         => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [197] {other vegetables,> {other vegetables} 0.013014743 0.4266667 0.030503305 2.205080
##      pastry}             => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [198] {bottled water,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      citrus fruit}      => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [199] {citrus fruit,   => {other vegetables} 0.013014743 0.4266667 0.030503305 2.205080
##      tropical fruit}    => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [200] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      tropical fruit}    => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [201] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      root vegetables}   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [202] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      root vegetables}   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [203] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      yogurt}            => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [204] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      rolls/buns}         => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [205] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      other vegetables}  => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
## [206] {citrus fruit,   => {whole milk}      0.013014743 0.4266667 0.030503305 2.205080
##      whole milk}         => {other vegetables} 0.013014743 0.4266667 0.030503305 2.205080
## [207] {root vegetables,

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##      shopping bags} => {other vegetables} 0.006609049 0.5158730 0.012811388 2.666112
## [208] {root vegetables, => {whole milk} 0.005287239 0.4126984 0.012811388 1.615157
##      shopping bags} => {other vegetables} 0.005083884 0.4237288 0.011997966 2.189896
## [209] {bottled water, => {other vegetables} 0.005998983 0.4306569 0.013929842 2.225702
##      sausage} => {whole milk} 0.007219115 0.5182482 0.013929842 2.028241
## [210] {sausage, => {other vegetables} 0.006812405 0.4557823 0.014946619 2.355554
##      tropical fruit} => {whole milk} 0.007727504 0.5170068 0.014946619 2.023383
## [211] {sausage, => {other vegetables} 0.008134215 0.4145078 0.019623793 2.142241
##      tropical fruit} => {whole milk} 0.008744281 0.4455959 0.019623793 1.743906
## [212] {root vegetables, => {whole milk} 0.008032537 0.4340659 0.018505338 1.698782
##      sausage} => {other vegetables} 0.007015760 0.4480519 0.015658363 2.315602
## [213] {root vegetables, => {whole milk} 0.007320793 0.4675325 0.015658363 1.829758
##      sausage} => {whole milk} 0.009659380 0.4203540 0.022979156 1.645118
## [214] {sausage, => {whole milk} 0.010777834 0.4344262 0.024809354 1.700192
##      yogurt} => {other vegetables} 0.012302999 0.5845411 0.021047280 3.020999
## [215] {sausage, => {whole milk} 0.011997966 0.5700483 0.021047280 2.230969
##      yogurt} => {other vegetables} 0.012302999 0.4201389 0.029283172 2.171343
## [216] {bottled water, => {whole milk} 0.015149975 0.5173611 0.029283172 2.024770
##      tropical fruit} => {whole milk} 0.010981190 0.4462810 0.024605999 1.746587
## [217] {bottled water, => {whole milk} 0.017081851 0.4759207 0.035892222 1.862587
##      root vegetables} => {other vegetables} 0.017081851 0.4038462 0.042297916 2.087140
## [218] {bottled water, => {other vegetables} 0.008235892 0.4426230 0.018607016 2.287544
##      root vegetables} => {whole milk} 0.008134215 0.4371585 0.018607016 1.710885
## [219] {bottled water, => {other vegetables} 0.012913066 0.5000000 0.025826131 2.584078
##      yogurt} => {whole milk} 0.014539908 0.5629921 0.025826131 2.203354
## [220] {bottled water, => {other vegetables} 0.012201322 0.5020921 0.024300966 2.594890
##      other vegetables} => {whole milk} 0.012709710 0.5230126 0.024300966 2.046888
## [221] {root vegetables, => {other vegetables} 0.006609049 0.5158730 0.012811388 2.666112
##      tropical fruit} => {whole milk} 0.005287239 0.4126984 0.012811388 1.615157
## [222] {root vegetables, => {other vegetables} 0.005083884 0.4237288 0.011997966 2.189896
##      tropical fruit} => {whole milk} 0.005998983 0.4306569 0.013929842 2.225702
## [223] {tropical fruit, => {other vegetables} 0.006812405 0.4557823 0.014946619 2.355554
##      yogurt} => {whole milk} 0.007727504 0.5170068 0.014946619 2.023383
## [224] {tropical fruit, => {other vegetables} 0.008134215 0.4145078 0.019623793 2.142241
##      yogurt} => {whole milk} 0.008744281 0.4455959 0.019623793 1.743906
## [225] {rolls/buns, => {whole milk} 0.008032537 0.4340659 0.018505338 1.698782
##      tropical fruit} => {other vegetables} 0.007015760 0.4480519 0.015658363 2.315602
## [226] {other vegetables, => {whole milk} 0.007320793 0.4675325 0.015658363 1.829758
##      tropical fruit} => {other vegetables} 0.009659380 0.4203540 0.022979156 1.645118
## [227] {tropical fruit, => {whole milk} 0.010777834 0.4344262 0.024809354 1.700192
##      whole milk} => {other vegetables} 0.012302999 0.5845411 0.021047280 3.020999
## [228] {root vegetables, => {whole milk} 0.011997966 0.5700483 0.021047280 2.230969
##      soda} => {other vegetables} 0.012302999 0.4201389 0.029283172 2.171343
## [229] {root vegetables, => {whole milk} 0.015149975 0.5173611 0.029283172 2.024770
##      soda} => {other vegetables} 0.010981190 0.4462810 0.024605999 1.746587
## [230] {root vegetables, => {whole milk} 0.017081851 0.4759207 0.035892222 1.862587
##      yogurt} => {other vegetables} 0.017081851 0.4038462 0.042297916 2.087140
## [231] {root vegetables, => {other vegetables} 0.008235892 0.4426230 0.018607016 2.287544
##      yogurt} => {whole milk} 0.008134215 0.4371585 0.018607016 1.710885
## [232] {rolls/buns, => {other vegetables} 0.012913066 0.5000000 0.025826131 2.584078
##      root vegetables} => {whole milk} 0.014539908 0.5629921 0.025826131 2.203354
## [233] {rolls/buns, => {other vegetables} 0.012201322 0.5020921 0.024300966 2.594890
##      root vegetables} => {whole milk} 0.012709710 0.5230126 0.024300966 2.046888
## [234] {other vegetables,

```

```

##      root vegetables}          => {whole milk}      0.023182511  0.4892704 0.047381800 1.914833
## [235] {root vegetables,       => {other vegetables} 0.023182511  0.4740125 0.048906965 2.449770
##      whole milk}
## [236] {other vegetables,     => {whole milk}      0.013929842  0.4254658 0.032740214 1.665124
##      soda}
## [237] {rolls/buns,           => {whole milk}      0.015556685  0.4526627 0.034367056 1.771563
##      yogurt}
## [238] {other vegetables,     => {whole milk}      0.022267412  0.5128806 0.043416370 2.007235
##      yogurt}
## [239] {other vegetables,     => {whole milk}      0.017895272  0.4200477 0.042602949 1.643919
##      rolls/buns}
## [240] {fruit/vegetable juice, => {whole milk}      0.005083884  0.6172840 0.008235892 2.415833
##      other vegetables,
##      yogurt}
## [241] {fruit/vegetable juice, => {whole milk}      0.005083884  0.5376344 0.009456024 2.778578
##      whole milk,
##      yogurt}
## [242] {fruit/vegetable juice, => {other vegetables} 0.005083884  0.4854369 0.010472801 3.479790
##      other vegetables,
##      whole milk}
## [243] {other vegetables,      => {yogurt}         0.005185562  0.6071429 0.008540925 2.376144
##      root vegetables,
##      whipped/sour cream}
## [244] {root vegetables,       => {whole milk}      0.005185562  0.5483871 0.009456024 2.834150
##      whipped/sour cream,
##      whole milk}
## [245] {other vegetables,     => {whole milk}      0.005592272  0.5500000 0.010167768 2.152507
##      whipped/sour cream,
##      yogurt}
## [246] {whipped/sour cream,   => {other vegetables} 0.005592272  0.5140187 0.010879512 2.656529
##      whole milk,
##      yogurt}
## [247] {other vegetables,     => {whole milk}      0.005490595  0.6750000 0.008134215 2.641713
##      pip fruit,
##      root vegetables}
## [248] {pip fruit,            => {other vegetables} 0.005490595  0.6136364 0.008947636 3.171368
##      root vegetables,
##      whole milk}
## [249] {other vegetables,     => {root vegetables} 0.005490595  0.4060150 0.013523132 3.724961
##      pip fruit,
##      whole milk}
## [250] {other vegetables,     => {whole milk}      0.005083884  0.6250000 0.008134215 2.446031
##      pip fruit,
##      yogurt}
## [251] {pip fruit,             => {other vegetables} 0.005083884  0.5319149 0.009557702 2.749019
##      whole milk,
##      yogurt}
## [252] {citrus fruit,          => {whole milk}      0.005795628  0.5588235 0.010371124 2.187039
##      other vegetables,
##      root vegetables}
## [253] {citrus fruit,          => {other vegetables} 0.005795628  0.6333333 0.009150991 3.273165
##      root vegetables,
##      whole milk}
## [254] {citrus fruit,

```

```

##      other vegetables,
##      whole milk}          => {root vegetables}  0.005795628  0.4453125 0.013014743 4.085493
## [255] {root vegetables,
##      tropical fruit,
##      yogurt}             => {whole milk}        0.005693950  0.7000000 0.008134215 2.739554
## [256] {root vegetables,
##      tropical fruit,
##      whole milk}          => {yogurt}           0.005693950  0.4745763 0.011997966 3.401937
## [257] {other vegetables,
##      root vegetables,
##      tropical fruit}     => {whole milk}        0.007015760  0.5702479 0.012302999 2.231750
## [258] {root vegetables,
##      tropical fruit,
##      whole milk}          => {other vegetables} 0.007015760  0.5847458 0.011997966 3.022057
## [259] {other vegetables,
##      tropical fruit,
##      whole milk}          => {root vegetables} 0.007015760  0.4107143 0.017081851 3.768074
## [260] {other vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}        0.007625826  0.6198347 0.012302999 2.425816
## [261] {tropical fruit,
##      whole milk,
##      yogurt}              => {other vegetables} 0.007625826  0.5033557 0.015149975 2.601421
## [262] {other vegetables,
##      tropical fruit,
##      whole milk}          => {yogurt}            0.007625826  0.4464286 0.017081851 3.200164
## [263] {other vegetables,
##      root vegetables,
##      yogurt}              => {whole milk}        0.007829181  0.6062992 0.012913066 2.372842
## [264] {root vegetables,
##      whole milk,
##      yogurt}              => {other vegetables} 0.007829181  0.5384615 0.014539908 2.782853
## [265] {other vegetables,
##      rolls/buns,
##      root vegetables}    => {whole milk}        0.006202339  0.5083333 0.012201322 1.989438
## [266] {rolls/buns,
##      root vegetables,
##      whole milk}          => {other vegetables} 0.006202339  0.4880000 0.012709710 2.522060
## [267] {other vegetables,
##      rolls/buns,
##      yogurt}              => {whole milk}        0.005998983  0.5221239 0.011489578 2.043410
inspect(subset(groceries_rule, subset=lift > 2.5 & confidence > 0.4))

##      lhs                      rhs          support  confidence   coverage   lift count
## [1] {herbs}                  => {root vegetables} 0.007015760  0.4312500 0.016268429 3.956477  69
## [2] {onions,
##      root vegetables}       => {other vegetables} 0.005693950  0.6021505 0.009456024 3.112008  56
## [3] {onions,
##      whole milk}             => {other vegetables} 0.006609049  0.5462185 0.012099644 2.822942  65
## [4] {cream cheese,
##      whole milk}             => {yogurt}           0.006609049  0.4012346 0.016471784 2.876197  65
## [5] {chicken,
##      root vegetables}       => {other vegetables} 0.005693950  0.5233645 0.010879512 2.704829  56
## [6] {frozen vegetables,

```

```

##      root vegetables} => {other vegetables} 0.006100661 0.5263158 0.011591256 2.720082 60
## [7] {beef,
##      other vegetables} => {root vegetables} 0.007930859 0.4020619 0.019725470 3.688692 78
## [8] {curd,
##      tropical fruit} => {yogurt}          0.005287239 0.5148515 0.010269446 3.690645 52
## [9] {curd,
##      tropical fruit} => {other vegetables} 0.005287239 0.5148515 0.010269446 2.660833 52
## [10] {curd,
##      root vegetables} => {other vegetables} 0.005490595 0.5046729 0.010879512 2.608228 54
## [11] {pork,
##      root vegetables} => {other vegetables} 0.007015760 0.5149254 0.013624809 2.661214 69
## [12] {pork,
##      rolls/buns}      => {other vegetables} 0.005592272 0.4954955 0.011286223 2.560798 55
## [13] {margarine,
##      root vegetables} => {other vegetables} 0.005897306 0.5321101 0.011082867 2.750028 58
## [14] {butter,
##      whipped/sour cream} => {other vegetables} 0.005795628 0.5700000 0.010167768 2.945849 57
## [15] {butter,
##      whipped/sour cream} => {whole milk}       0.006710727 0.6600000 0.010167768 2.583008 66
## [16] {butter,
##      tropical fruit}   => {other vegetables} 0.005490595 0.5510204 0.009964413 2.847759 54
## [17] {butter,
##      root vegetables}  => {other vegetables} 0.006609049 0.5118110 0.012913066 2.645119 65
## [18] {butter,
##      yogurt}          => {whole milk}       0.009354347 0.6388889 0.014641586 2.500387 92
## [19] {newspapers,
##      root vegetables}  => {other vegetables} 0.005998983 0.5221239 0.011489578 2.698417 59
## [20] {domestic eggs,
##      whipped/sour cream} => {other vegetables} 0.005083884 0.5102041 0.009964413 2.636814 50
## [21] {domestic eggs,
##      root vegetables}  => {other vegetables} 0.007320793 0.5106383 0.014336553 2.639058 72
## [22] {fruit/vegetable juice,
##      root vegetables}  => {other vegetables} 0.006609049 0.5508475 0.011997966 2.846865 65
## [23] {pip fruit,
##      whipped/sour cream} => {other vegetables} 0.005592272 0.6043956 0.009252669 3.123610 55
## [24] {pip fruit,
##      whipped/sour cream} => {whole milk}       0.005998983 0.6483516 0.009252669 2.537421 59
## [25] {citrus fruit,
##      whipped/sour cream} => {other vegetables} 0.005693950 0.5233645 0.010879512 2.704829 56
## [26] {tropical fruit,
##      whipped/sour cream} => {yogurt}          0.006202339 0.4485294 0.013828165 3.215224 61
## [27] {tropical fruit,
##      whipped/sour cream} => {other vegetables} 0.007829181 0.5661765 0.013828165 2.926088 77
## [28] {root vegetables,
##      whipped/sour cream} => {other vegetables} 0.008540925 0.5000000 0.017081851 2.584078 84
## [29] {whipped/sour cream,
##      yogurt}           => {other vegetables} 0.010167768 0.4901961 0.020742247 2.533410 100
## [30] {citrus fruit,
##      pip fruit}         => {tropical fruit}  0.005592272 0.4044118 0.013828165 3.854060 55
## [31] {pip fruit,
##      root vegetables}  => {other vegetables} 0.008134215 0.5228758 0.015556685 2.702304 80
## [32] {pastry,
##      root vegetables}  => {other vegetables} 0.005897306 0.5370370 0.010981190 2.775491 58
## [33] {citrus fruit,

```

```

##      root vegetables} => {other vegetables} 0.010371124 0.5862069 0.017691917 3.029608 102
## [34] {root vegetables,
##       shopping bags} => {other vegetables} 0.006609049 0.5158730 0.012811388 2.666112 65
## [35] {root vegetables,
##       tropical fruit} => {other vegetables} 0.012302999 0.5845411 0.021047280 3.020999 121
## [36] {root vegetables,
##       yogurt} => {other vegetables} 0.012913066 0.5000000 0.025826131 2.584078 127
## [37] {rolls/buns,
##       root vegetables} => {other vegetables} 0.012201322 0.5020921 0.024300966 2.594890 120
## [38] {fruit/vegetable juice,
##       whole milk,
##       yogurt} => {other vegetables} 0.005083884 0.5376344 0.009456024 2.778578 50
## [39] {fruit/vegetable juice,
##       other vegetables,
##       whole milk} => {yogurt} 0.005083884 0.4854369 0.010472801 3.479790 50
## [40] {root vegetables,
##       whipped/sour cream,
##       whole milk} => {other vegetables} 0.005185562 0.5483871 0.009456024 2.834150 51
## [41] {whipped/sour cream,
##       whole milk,
##       yogurt} => {other vegetables} 0.005592272 0.5140187 0.010879512 2.656529 55
## [42] {other vegetables,
##       pip fruit,
##       root vegetables} => {whole milk} 0.005490595 0.6750000 0.008134215 2.641713 54
## [43] {pip fruit,
##       root vegetables,
##       whole milk} => {other vegetables} 0.005490595 0.6136364 0.008947636 3.171368 54
## [44] {other vegetables,
##       pip fruit,
##       whole milk} => {root vegetables} 0.005490595 0.4060150 0.013523132 3.724961 54
## [45] {pip fruit,
##       whole milk,
##       yogurt} => {other vegetables} 0.005083884 0.5319149 0.009557702 2.749019 50
## [46] {citrus fruit,
##       root vegetables,
##       whole milk} => {other vegetables} 0.005795628 0.6333333 0.009150991 3.273165 57
## [47] {citrus fruit,
##       other vegetables,
##       whole milk} => {root vegetables} 0.005795628 0.4453125 0.013014743 4.085493 57
## [48] {root vegetables,
##       tropical fruit,
##       yogurt} => {whole milk} 0.005693950 0.7000000 0.008134215 2.739554 56
## [49] {root vegetables,
##       tropical fruit,
##       whole milk} => {yogurt} 0.005693950 0.4745763 0.011997966 3.401937 56
## [50] {root vegetables,
##       tropical fruit,
##       whole milk} => {other vegetables} 0.007015760 0.5847458 0.011997966 3.022057 69
## [51] {other vegetables,
##       tropical fruit,
##       whole milk} => {root vegetables} 0.007015760 0.4107143 0.017081851 3.768074 69
## [52] {tropical fruit,
##       whole milk,
##       yogurt} => {other vegetables} 0.007625826 0.5033557 0.015149975 2.601421 75

```

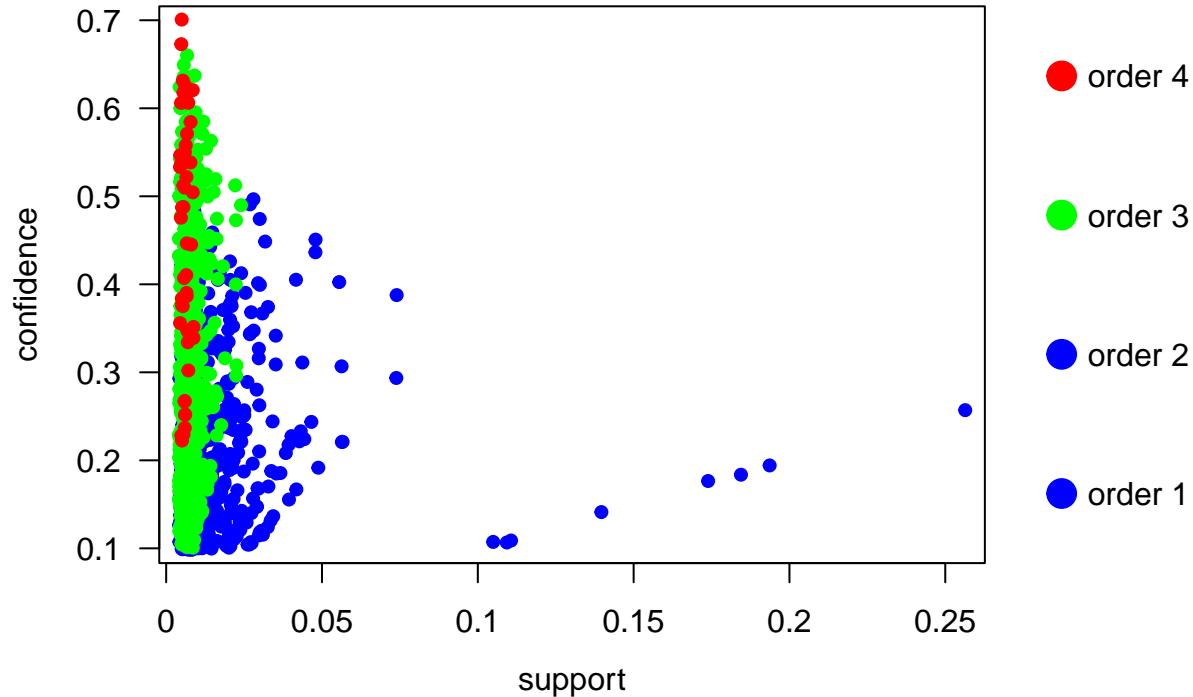
```

## [53] {other vegetables,
##       tropical fruit,
##       whole milk}      => {yogurt}          0.007625826 0.4464286 0.017081851 3.200164 75
## [54] {root vegetables,
##       whole milk,
##       yogurt}         => {other vegetables} 0.007829181 0.5384615 0.014539908 2.782853 77
## [55] {rolls/buns,
##       root vegetables,
##       whole milk}     => {other vegetables} 0.006202339 0.4880000 0.012709710 2.522060 61
# "two key" plot: coloring is by size (order) of item set
plot(groceries_rule, method='two-key plot')

```

To reduce overplotting, jitter is added! Use jitter = 0 to prevent jitter.

Two-key plot



```

# can now look at subsets driven by the plot
inspect(subset(groceries_rule, support > 0.035))

```

	lhs	rhs	support	confidence	coverage
## [1]	{}	=> {bottled water}	0.11052364	0.1105236	1.0000000
## [2]	{}	=> {tropical fruit}	0.10493137	0.1049314	1.0000000
## [3]	{}	=> {root vegetables}	0.10899847	0.1089985	1.0000000
## [4]	{}	=> {soda}	0.17437722	0.1743772	1.0000000
## [5]	{}	=> {yogurt}	0.13950178	0.1395018	1.0000000
## [6]	{}	=> {rolls/buns}	0.18393493	0.1839349	1.0000000
## [7]	{}	=> {other vegetables}	0.19349263	0.1934926	1.0000000
## [8]	{}	=> {whole milk}	0.25551601	0.2555160	1.0000000
## [9]	{tropical fruit}	=> {other vegetables}	0.03589222	0.3420543	0.1049314
## [10]	{other vegetables}	=> {tropical fruit}	0.03589222	0.1854966	0.1934926
## [11]	{tropical fruit}	=> {whole milk}	0.04229792	0.4031008	0.1049314

```

## [12] {whole milk}      => {tropical fruit}  0.04229792 0.1655392 0.2555160
## [13] {root vegetables} => {other vegetables} 0.04738180 0.4347015 0.1089985
## [14] {other vegetables} => {root vegetables} 0.04738180 0.2448765 0.1934926
## [15] {root vegetables} => {whole milk}        0.04890696 0.4486940 0.1089985
## [16] {whole milk}      => {root vegetables}  0.04890696 0.1914047 0.2555160
## [17] {soda}             => {rolls/buns}       0.03833249 0.2198251 0.1743772
## [18] {rolls/buns}       => {soda}            0.03833249 0.2084024 0.1839349
## [19] {soda}             => {whole milk}       0.04006101 0.2297376 0.1743772
## [20] {whole milk}      => {soda}            0.04006101 0.1567847 0.2555160
## [21] {yogurt}           => {other vegetables} 0.04341637 0.3112245 0.1395018
## [22] {other vegetables} => {yogurt}          0.04341637 0.2243826 0.1934926
## [23] {yogurt}           => {whole milk}       0.05602440 0.4016035 0.1395018
## [24] {whole milk}      => {yogurt}          0.05602440 0.2192598 0.2555160
## [25] {rolls/buns}       => {other vegetables} 0.04260295 0.2316197 0.1839349
## [26] {other vegetables} => {rolls/buns}       0.04260295 0.2201787 0.1934926
## [27] {rolls/buns}       => {whole milk}       0.05663447 0.3079049 0.1839349
## [28] {whole milk}      => {rolls/buns}       0.05663447 0.2216474 0.2555160
## [29] {other vegetables} => {whole milk}       0.07483477 0.3867578 0.1934926
## [30] {whole milk}      => {other vegetables} 0.07483477 0.2928770 0.2555160
##   lift  count
## [1] 1.0000000 1087
## [2] 1.0000000 1032
## [3] 1.0000000 1072
## [4] 1.0000000 1715
## [5] 1.0000000 1372
## [6] 1.0000000 1809
## [7] 1.0000000 1903
## [8] 1.0000000 2513
## [9] 1.7677896 353
## [10] 1.7677896 353
## [11] 1.57775950 416
## [12] 1.57775950 416
## [13] 2.2466049 466
## [14] 2.2466049 466
## [15] 1.7560310 481
## [16] 1.7560310 481
## [17] 1.1951242 377
## [18] 1.1951242 377
## [19] 0.8991124 394
## [20] 0.8991124 394
## [21] 1.6084566 427
## [22] 1.6084566 427
## [23] 1.5717351 551
## [24] 1.5717351 551
## [25] 1.1970465 419
## [26] 1.1970465 419
## [27] 1.2050318 557
## [28] 1.2050318 557
## [29] 1.5136341 736
## [30] 1.5136341 736
inspect(subset(groceries_rule, confidence > 0.6))

```

##	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{onions,						

```

##      root vegetables} => {other vegetables} 0.005693950 0.6021505 0.009456024 3.112008 56
## [2] {curd,          => {whole milk}      0.006507372 0.6336634 0.010269446 2.479936 64
## [3] {domestic eggs,=> {whole milk}      0.005185562 0.6219512 0.008337570 2.434099 51
## [4] {butter,         => {whole milk}      0.005998983 0.6210526 0.009659380 2.430582 59
## [5] {butter,         => {whole milk}      0.006710727 0.6600000 0.010167768 2.583008 66
## [6] {bottled water,=> {whole milk}      0.005388917 0.6022727 0.008947636 2.357084 53
## [7] {butter,         => {whole milk}      0.006202339 0.6224490 0.009964413 2.436047 61
## [8] {butter,         => {whole milk}      0.008235892 0.6377953 0.012913066 2.496107 81
## [9] {butter,         => {whole milk}      0.009354347 0.6388889 0.014641586 2.500387 92
## [10] {domestic eggs,=> {whole milk}      0.005388917 0.6235294 0.008642603 2.440275 53
## [11] {domestic eggs,=> {whole milk}      0.006914082 0.6071429 0.011387900 2.376144 68
## [12] {pip fruit,     => {other vegetables} 0.005592272 0.6043956 0.009252669 3.123610 55
## [13] {pip fruit,     => {whole milk}      0.005998983 0.6483516 0.009252669 2.537421 59
## [14] {fruit/vegetable juice,=> {whole milk}      0.005083884 0.6172840 0.008235892 2.415833 50
## [15] {other vegetables,=> {whole milk}      0.005185562 0.6071429 0.008540925 2.376144 51
## [16] {other vegetables,=> {whole milk}      0.005490595 0.6750000 0.008134215 2.641713 54
## [17] {pip fruit,     => {whole milk}      0.005490595 0.6136364 0.008947636 3.171368 54
## [18] {other vegetables,=> {other vegetables} 0.005490595 0.605083884 0.6250000 0.008134215 2.446031 50
## [19] {citrus fruit,  => {whole milk}      0.005795628 0.6333333 0.009150991 3.273165 57
## [20] {root vegetables,=> {other vegetables} 0.005693950 0.7000000 0.008134215 2.739554 56
## [21] {tropical fruit,=> {whole milk}      0.007625826 0.6198347 0.012302999 2.425816 75
## [22] {yogurt}        => {whole milk}      0.007829181 0.6062992 0.012913066 2.372842 77

```

```

# graph-based visualization
sub = subset(groceries_rule, subset=confidence > 0.01 & support > 0.005)
summary(sub)

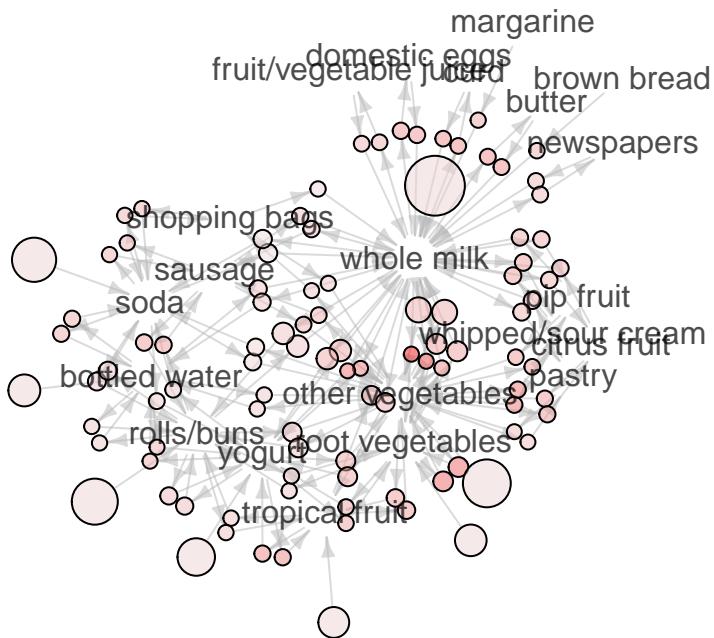
## set of 1582 rules
##
## rule length distribution (lhs + rhs):sizes
##   1   2   3   4
##   8 755 771  48
##
##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
##      1.000  2.000  3.000  2.543  3.000  4.000
##
## summary of quality measures:
##       support           confidence          coverage          lift
##      Min. :0.005084   Min. :0.1000   Min. :0.008134   Min. :0.4457
##  1st Qu.:0.005897  1st Qu.:0.1454  1st Qu.:0.022979  1st Qu.:1.4732
##  Median :0.007321  Median :0.2189  Median :0.037112  Median :1.8174
##  Mean   :0.010537  Mean   :0.2557  Mean   :0.053306  Mean   :1.9028
##  3rd Qu.:0.010371  3rd Qu.:0.3315  3rd Qu.:0.058058  3rd Qu.:2.2444
##  Max.   :0.255516  Max.   :0.7000  Max.   :1.000000  Max.   :4.6399
##
##       count
##      Min. : 50.0
##  1st Qu.: 58.0
##  Median : 72.0
##  Mean   : 103.6
##  3rd Qu.: 102.0
##  Max.   :2513.0
##
## mining info:
##       data ntransactions support confidence
##  groceries        9835     0.005       0.1
plot(sub, method='graph')

## Warning: plot: Too many rules supplied. Only plotting the best 100 rules using
## 'support' (change control parameter max if needed)

```

Graph for 100 rules

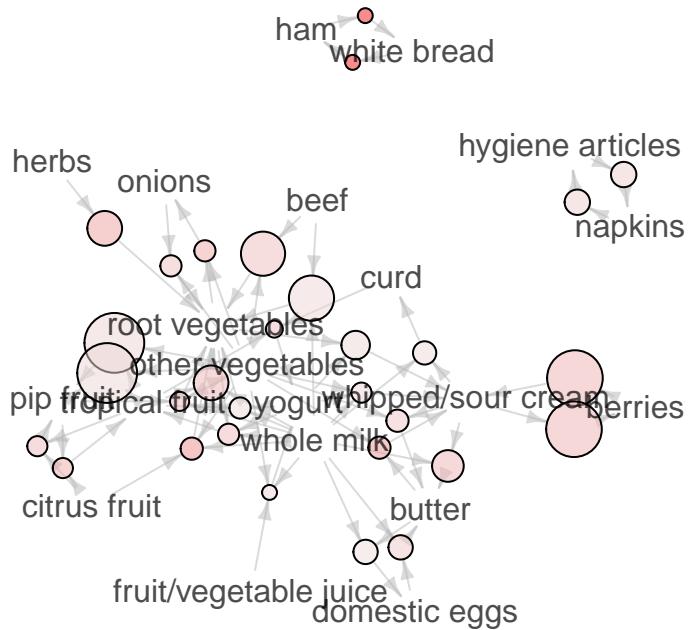
size: support (0.022 – 0.256)
color: lift (0.899 – 2.842)



```
plot(head(sub, 30, by='lift'), method='graph')
```

Graph for 30 rules

size: support (0.005 – 0.009)
color: lift (3.431 – 4.64)



Conclusion One interesting finding is that hygiene articles and napkins have a high lift score. This makes sense because people who care more about hygiene would tend to buy more napkins. Ham and white bread also have a high lift score, because people normally need them both to make sandwich.

Plotting the relationship between confidence and support, we find high lift rules tend to have low support. In the top-30 rules, we can also see a high density of same category merchandises are clustered together.