

STA380_Intro_to_ML_Exercises_2

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Visual story telling part 1: green buildings

Setting up data

```
## corrplot 0.90 loaded

## 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.

##
## Attaching package: 'mosaic'

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

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

## 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

## -- Attaching packages ----- tidyverse 1.3.1 --
```

```

## v tibble  3.1.2      v purrr   0.3.4
## v tidyr   1.1.3      v stringr 1.4.0
## v readr   1.4.0      v forcats 0.5.1

## -- Conflicts ----- tidyverse_conflicts() --
## 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 ggstance::geom_errorbarh() masks ggplot2::geom_errorbarh()
## x dplyr::lag()               masks stats::lag()
## x tidyr::pack()              masks Matrix::pack()
## x mosaic::stat()             masks ggplot2::stat()
## x mosaic::tally()            masks dplyr::tally()
## x tidyr::unpack()            masks Matrix::unpack()

## Google's Terms of Service: https://cloud.google.com/maps-platform/terms/.

## Please cite ggmap if you use it! See citation("ggmap") for details.

## Loading required package: xts

## Loading required package: zoo

##
## Attaching package: 'zoo'

## The following objects are masked from 'package:base':
## 
##     as.Date, as.Date.numeric

##
## Attaching package: 'xts'

## The following objects are masked from 'package:dplyr':
## 
##     first, last

## Loading required package: TTR

## Registered S3 method overwritten by 'quantmod':
##   method      from
##   as.zoo.data.frame zoo

##
## Attaching package: 'foreach'

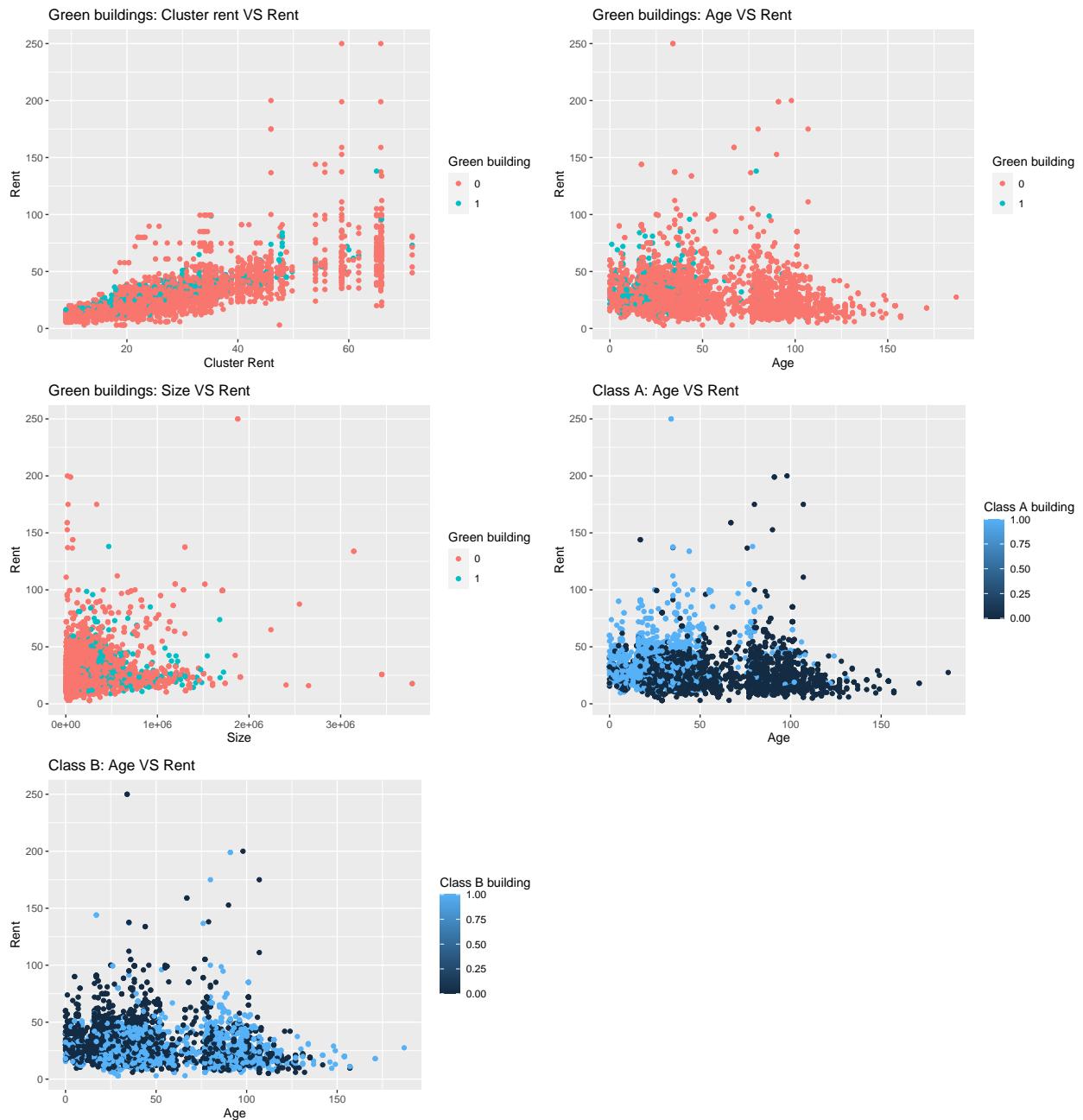
## The following objects are masked from 'package:purrr':
## 
##     accumulate, when

## [1] "Median rent for buildings with Green Rating: 27.6"

## [1] "Median rent for buildings without Green Rating: 25"

```

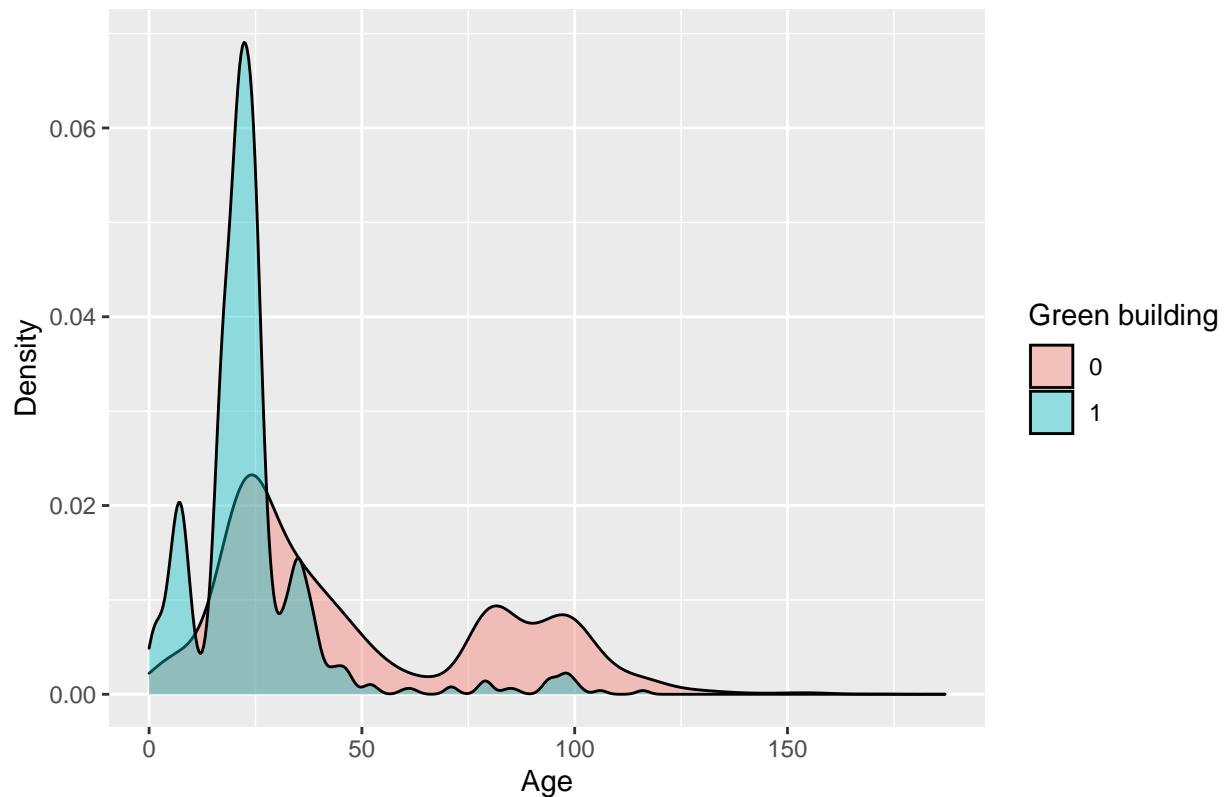
Now using visualizations we find out how other factors present in the data-set are related to rent.



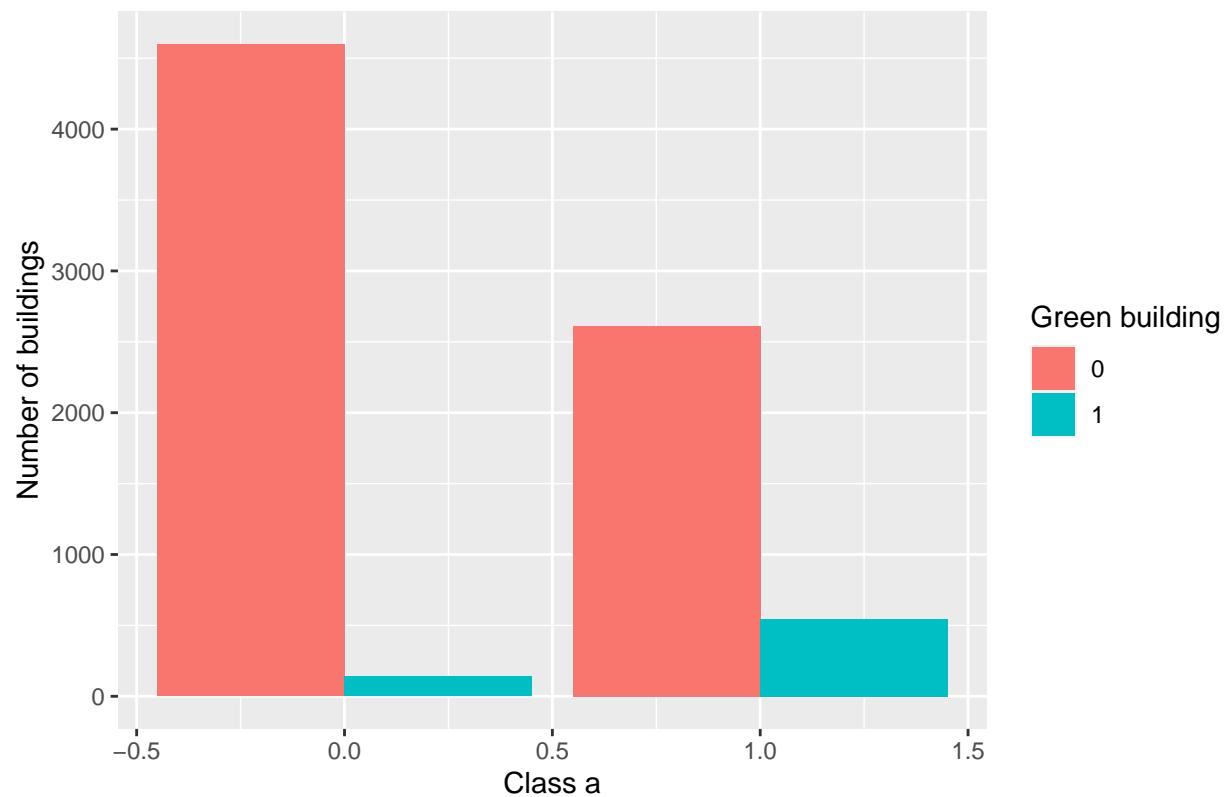
Observations

- * Rent and cluster rent are correlated, which makes sense since there is usually a consistent increase/decrease in rent in a locality.
- * Rent and size are correlated, no surprise there!
- * Class A buildings are generally newly constructed
- * There isn't a strong correlation between Age and rent
- * Class A buildings have higher rents as they are premium buildings
- * Class B have comparatively lower rents

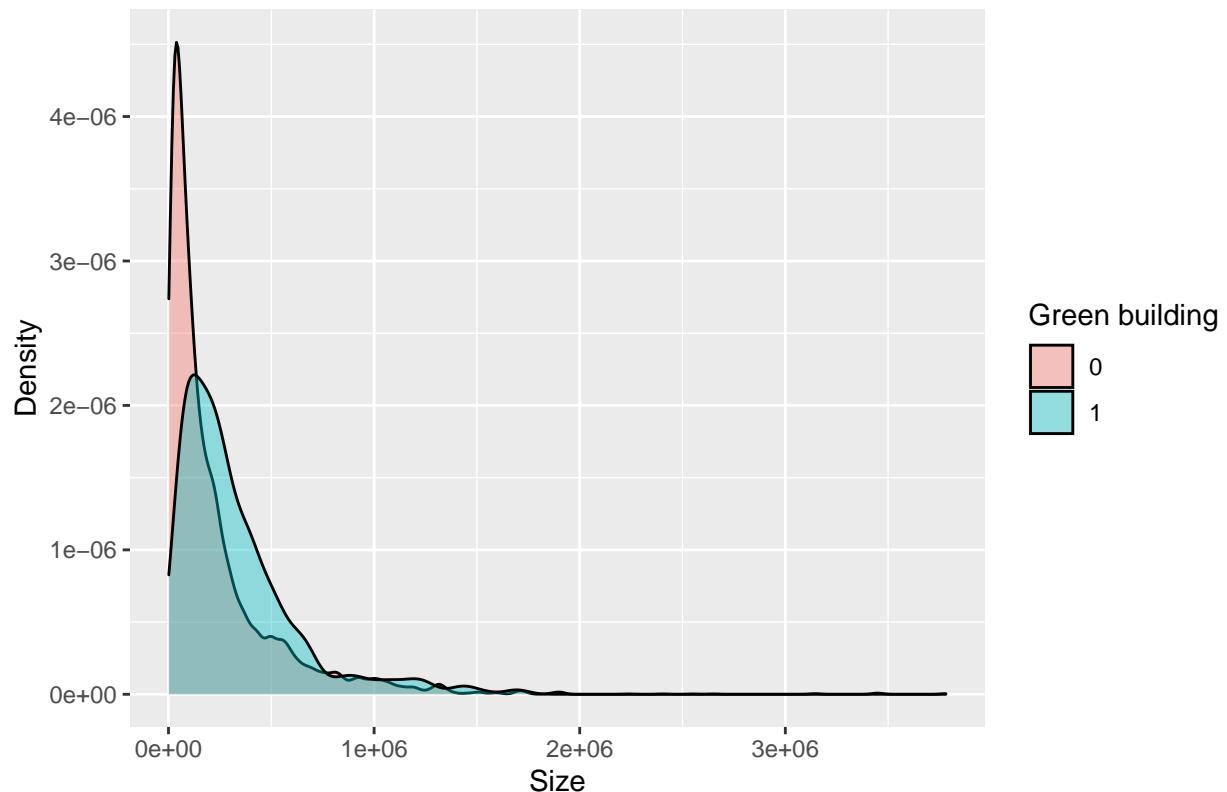
Distribution of age



Class A vs Green Buildings

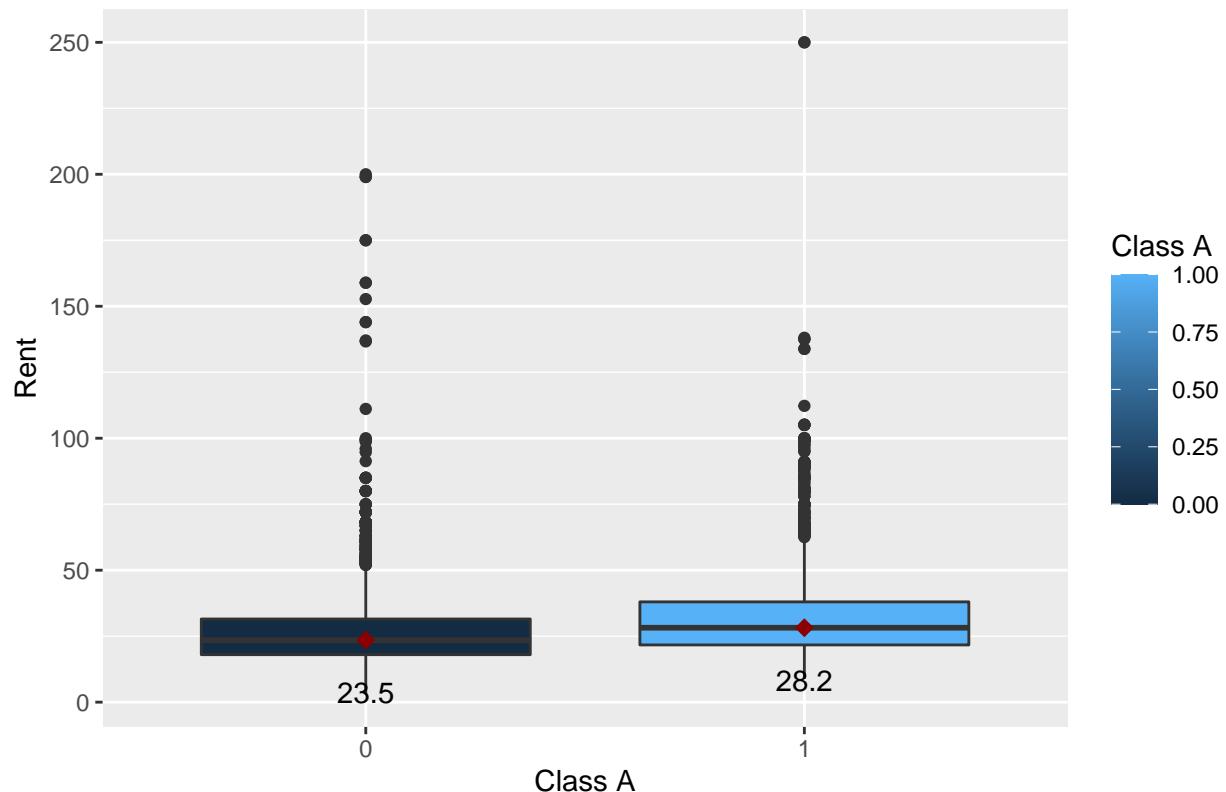


Distribution of size



```
## Warning: 'fun.y' is deprecated. Use 'fun' instead.
```

Rent vs Class a

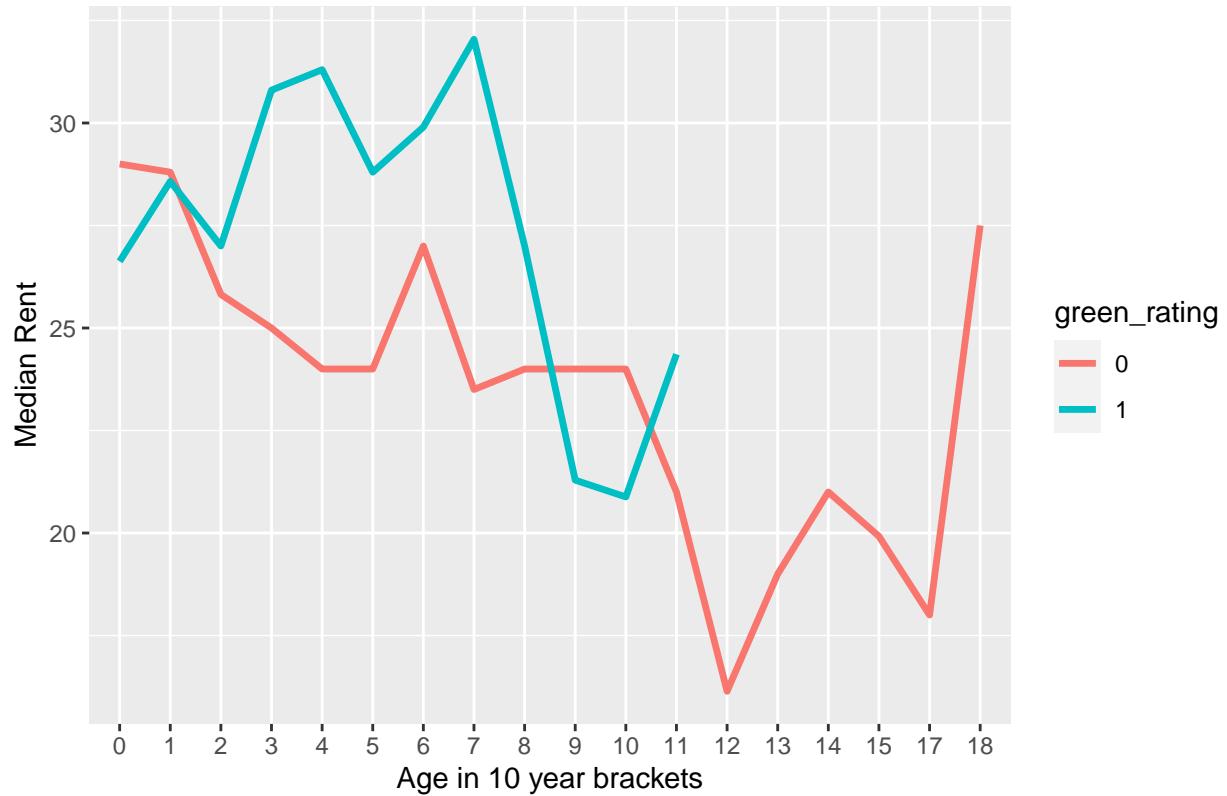


Observations

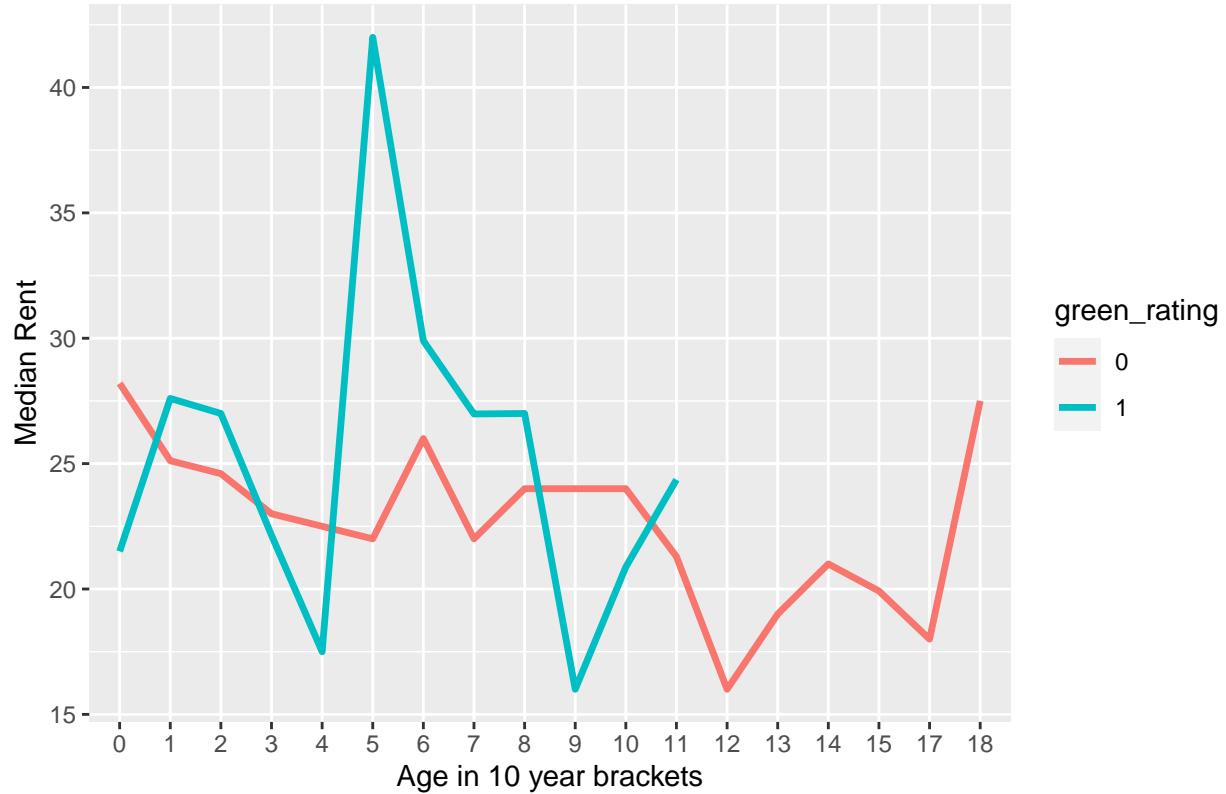
- The fact that builders have become environmental conscious in the past decade is clearly visible as most of the green building are younger than non-green buildings.
- Class A building are mostly green buildings
- The proportion of green and non-green building increases as the size of buildings increases
- Class A apartments are significantly more expensive.

As, Class A seems to be a significant factor in deciding the rent of an apartment. Previously, we've also observed that there is a huge overlap between green buildings and class A buildings, therefore we should check the rent for green buildings that are not class A.

Median rent over the years



Non-Class A buildings: Median rent over the years



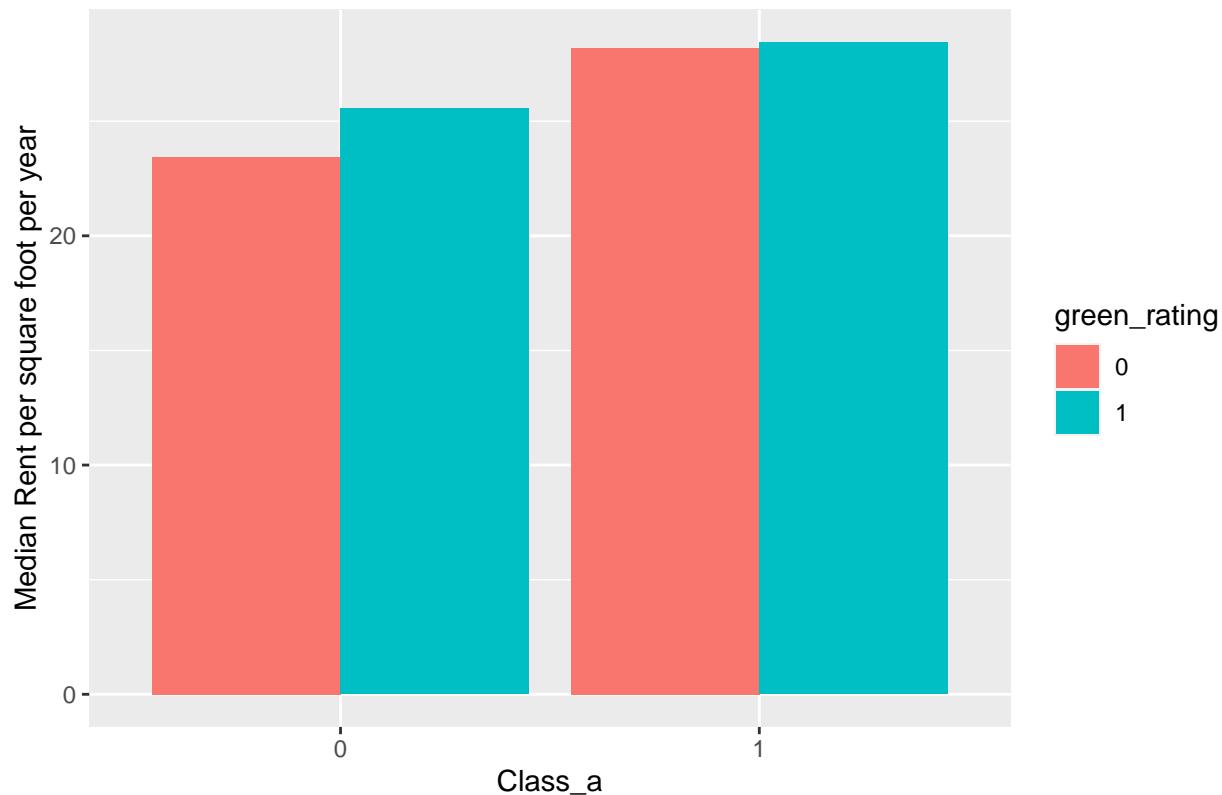
Observation For the Non-class A buildings : green buildings' rent are lower than non-green buildings' rent. Therefore, being class A is what was driving up the rents of green buildings.

Now, let's see if within Class A buildings if being green is positively impacting the rent.

```
## `summarise()` has grouped output by 'class_a'. You can override using the '.groups' argument.

## # A tibble: 4 x 3
## # Groups:   class_a [2]
##   class_a green_rating rent_median
##   <int>     <fct>          <dbl>
## 1 0         0               23.4
## 2 0         1               25.6
## 3 1         0               28.2
## 4 1         1               28.4
```

Median Rent for Green and Non-green buildings by Class_a



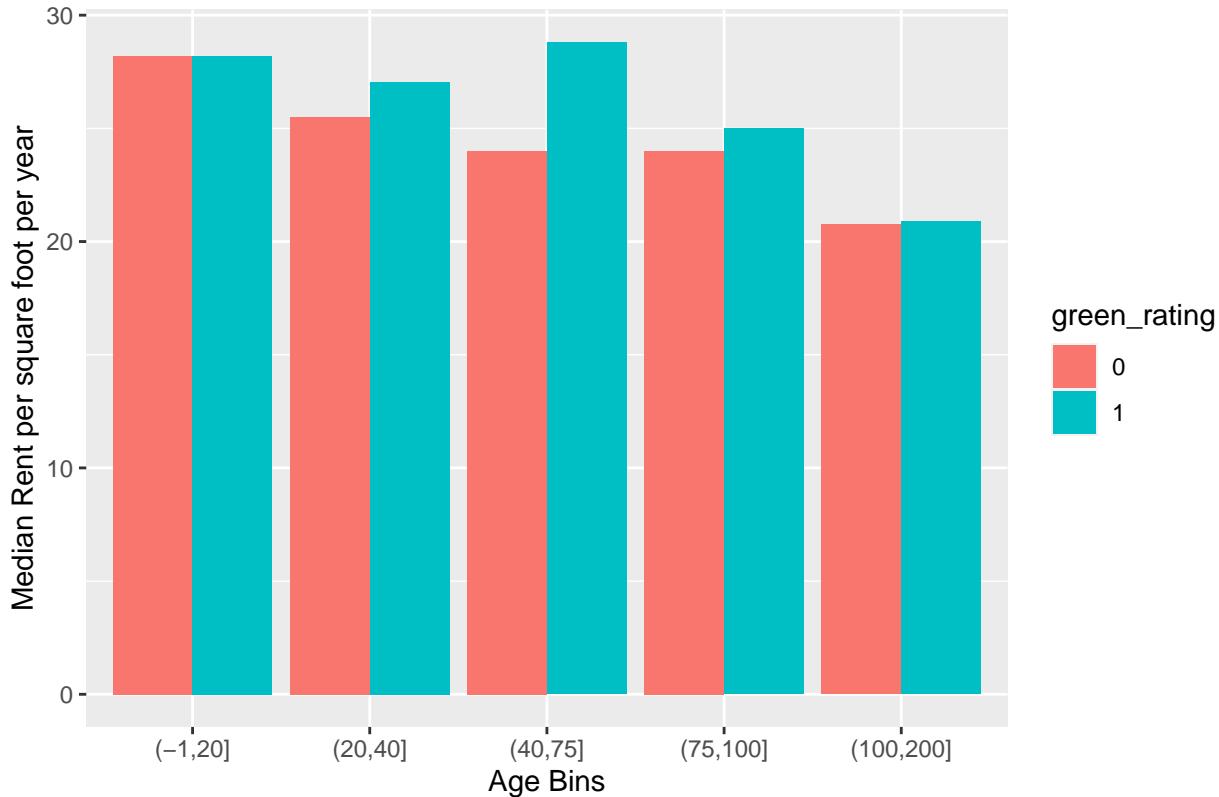
Observation There is a negligible difference in the median rent of green and non-green buildings within the class A category.

Age and Green Rating

Excel Gurus recommendation was based on the fact that green buildings would start giving out profit in 9 years. Let's revisit the age vs rent relation w.r.t to green buildings and check if that holds true.

```
## `summarise()` has grouped output by 'agebins'. You can override using the '.groups' argument.
```

Median Rent for Green and Non-green buildings by building age



Observation

Median rent for both green and non-green building is the same, which means that green buildings won't be profitable for the first 20 years. As mentioned, by the excel guru himself median values are more potent indicators as they are immune to outliers, which might be the case for green buildings since most of them are class A (premium).

Conclusion

- Excel guru needs to look at other factors impacting an apartments rent.
- Class A is the confounding variable for the relationship between rent and green status.
- Excel guru's assessment that green buildings would be profitable after 9 years is wrong. We couldn't see any difference between the rent of green and non-green apartments up to 20 years.
- Information regarding the new project being Class A or not is not provided. We've observed that green buildings that are not class A have lower rents than class A. So, the builder should invest in a class A project.

```
## 'data.frame': 99260 obs. of 29 variables:
## $ Year      : int  2008 2008 2008 2008 2008 2008 2008 2008 2008 2008 ...
## $ Month     : int  1 1 1 1 1 1 1 1 1 1 ...
## $ DayofMonth: int  1 1 1 1 1 1 1 1 1 1 ...
## $ DayOfWeek  : int  2 2 2 2 2 2 2 2 2 2 ...
## $ DepTime   : int  120 555 600 601 601 636 646 650 650 654 ...
## $ CRSDepTime: int  1935 600 600 605 600 645 655 700 650 700 ...
## $ ArrTime   : int  309 826 728 727 654 934 735 841 1139 1117 ...
## $ CRSArrTime: int  2130 835 729 750 700 932 750 857 1145 1133 ...
```

```

## $ UniqueCarrier : chr "9E" "AA" "YV" "9E" ...
## $ FlightNum : int 5746 1614 2883 5743 1157 1674 340 541 1182 1060 ...
## $ TailNum : chr "84129E" "N438AA" "N922FJ" "89189E" ...
## $ ActualElapsedTime: int 109 151 148 86 53 178 49 111 169 203 ...
## $ CRSElapsedTime : int 115 155 149 105 60 167 55 117 175 213 ...
## $ AirTime : int 88 133 125 70 38 145 28 94 153 177 ...
## $ ArrDelay : int 339 -9 -1 -23 -6 2 -15 -16 -6 -16 ...
## $ DepDelay : int 345 -5 0 -4 1 -9 -9 -10 0 -6 ...
## $ Origin : chr "MEM" "AUS" "AUS" "AUS" ...
## $ Dest : chr "AUS" "ORD" "PHX" "MEM" ...
## $ Distance : int 559 978 872 559 190 1042 140 650 1242 1522 ...
## $ TaxiIn : int 3 7 7 4 5 11 6 6 4 13 ...
## $ TaxiOut : int 18 11 16 12 10 22 15 11 12 13 ...
## $ Cancelled : int 0 0 0 0 0 0 0 0 0 0 ...
## $ CancellationCode : chr "" "" "" ...
## $ Diverted : int 0 0 0 0 0 0 0 0 0 0 ...
## $ CarrierDelay : int 339 NA NA NA NA NA NA NA NA ...
## $ WeatherDelay : int 0 NA NA NA NA NA NA NA NA ...
## $ NASDelay : int 0 NA NA NA NA NA NA NA NA ...
## $ SecurityDelay : int 0 NA NA NA NA NA NA NA NA ...
## $ LateAircraftDelay: int 0 NA NA NA NA NA NA NA NA ...

```

From a high level view, we can see that the most important columns for our analysis are going to be Month DayOfWeek UniqueCarrier ArrDelaya DepDelay Origin Dest Distance Cancelled CancellationCode CarrierDelay WeatherDelay NASDelay SecurityDelay LateAircraftDelay

We won't limit our analysis to these features but will base most of our inferences around these.

##	Year	Month	DayofMonth	DayOfWeek
##	0	0	0	0
##	DepTime	CRSDepTime	ArrTime	CRSArrTime
##	1413	0	1567	0
##	UniqueCarrier	FlightNum	TailNum	ActualElapsedTime
##	0	0	0	1601
##	CRSElapsedTime	AirTime	ArrDelay	DepDelay
##	11	1601	1601	1413
##	Origin	Dest	Distance	TaxiIn
##	0	0	0	1567
##	TaxiOut	Cancelled	CancellationCode	Diverted
##	1419	0	0	0
##	CarrierDelay	WeatherDelay	NASDelay	SecurityDelay
##	79513	79513	79513	79513
##	LateAircraftDelay			
##	79513			
##	Year	Month	DayofMonth	DayOfWeek
##	0	0	0	0
##	DepTime	CRSDepTime	ArrTime	CRSArrTime
##	0	0	0	0
##	UniqueCarrier	FlightNum	TailNum	ActualElapsedTime
##	0	0	0	0
##	CRSElapsedTime	AirTime	ArrDelay	DepDelay
##	0	0	0	0
##	Origin	Dest	Distance	TaxiIn

```

##          0          0          0          0
##      TaxiOut     Cancelled CancellationCode     Diverted
##          0          0          0          0
##      CarrierDelay WeatherDelay     NASDelay SecurityDelay
##          0          0          0          0
## LateAircraftDelay
##          0

##      Year       Month     DayofMonth   DayOfWeek    DepTime
## Min. :2008     6       : 9090     Min. : 1.00  1:14798   Min. : 0
## 1st Qu.:2008   5       : 9021     1st Qu.: 8.00  2:14803   1st Qu.: 907
## Median :2008   7       : 8931     Median :16.00  3:14841   Median :1321
## Mean  :2008    3       : 8921     Mean   :15.73  4:14774   Mean   :1310
## 3rd Qu.:2008   1       : 8726     3rd Qu.:23.00  5:14768   3rd Qu.:1725
## Max. :2008    8       : 8553     Max.  :31.00  6:11454   Max.  :2400
##          (Other):46018           7:13822
##      CRSDepTime     ArrTime     CRSArrTime UniqueCarrier     FlightNum
## Min. : 55     Min. : 0     Min. : 5 Length:99260     Min. : 1
## 1st Qu.: 915   1st Qu.:1057  1st Qu.:1115 Class :character  1st Qu.: 640
## Median :1320   Median :1524  Median :1535 Mode  :character  Median :1465
## Mean  :1320   Mean  :1464  Mean   :1505                   Mean  :1917
## 3rd Qu.:1720   3rd Qu.:1900  3rd Qu.:1902                   3rd Qu.:2653
## Max. :2346   Max.  :2400  Max.   :2400                   Max.  :9741
##
##      TailNum     ActualElapsedTime CRSElapsedTime     AirTime
## Length:99260   Min. : 0.0     Min. : 0.0   Min. : 0.0
## Class :character  1st Qu.: 56.0    1st Qu.: 58.0  1st Qu.: 38.0
## Mode  :character  Median :123.0    Median :130.0  Median :104.0
##          Mean  :118.2     Mean  :122.1  Mean  : 98.2
##          3rd Qu.:163.0    3rd Qu.:165.0  3rd Qu.:141.0
##          Max.  :506.0     Max.  :320.0  Max.  :402.0
##
##      ArrDelay     DepDelay     Origin        Dest
## Min. :-129.000  Min. :-42.000 Length:99260     Length:99260
## 1st Qu.: -9.000  1st Qu.: -4.000 Class :character  Class :character
## Median : -1.000  Median : 0.000 Mode  :character  Mode  :character
## Mean  :  6.951   Mean  : 9.041
## 3rd Qu.: 10.000  3rd Qu.: 7.000
## Max. : 948.000  Max.  :875.000
##
##      Distance     TaxiIn     TaxiOut     Cancelled
## Min. : 66     Min. : 0.000  Min. : 0.00  Min. :0.00000
## 1st Qu.: 190   1st Qu.: 4.000  1st Qu.: 9.00  1st Qu.:0.00000
## Median : 775   Median : 5.000  Median :12.00  Median :0.00000
## Mean  : 705   Mean  : 6.312  Mean  :13.76  Mean  :0.01431
## 3rd Qu.:1085   3rd Qu.: 7.000  3rd Qu.:16.00  3rd Qu.:0.00000
## Max. :1770   Max.  :143.000  Max.  :305.00  Max.  :1.00000
##
##      CancellationCode     Diverted     CarrierDelay     WeatherDelay
## Length:99260   Min. :0.000000  Min. : 0.000  Min. : 0.0000
## Class :character  1st Qu.:0.000000  1st Qu.: 0.000  1st Qu.: 0.0000
## Mode  :character  Median :0.000000  Median : 0.000  Median : 0.0000
##          Mean  :0.001824  Mean  : 3.061  Mean  : 0.4461
##          3rd Qu.:0.000000  3rd Qu.: 0.000  3rd Qu.: 0.0000

```

```

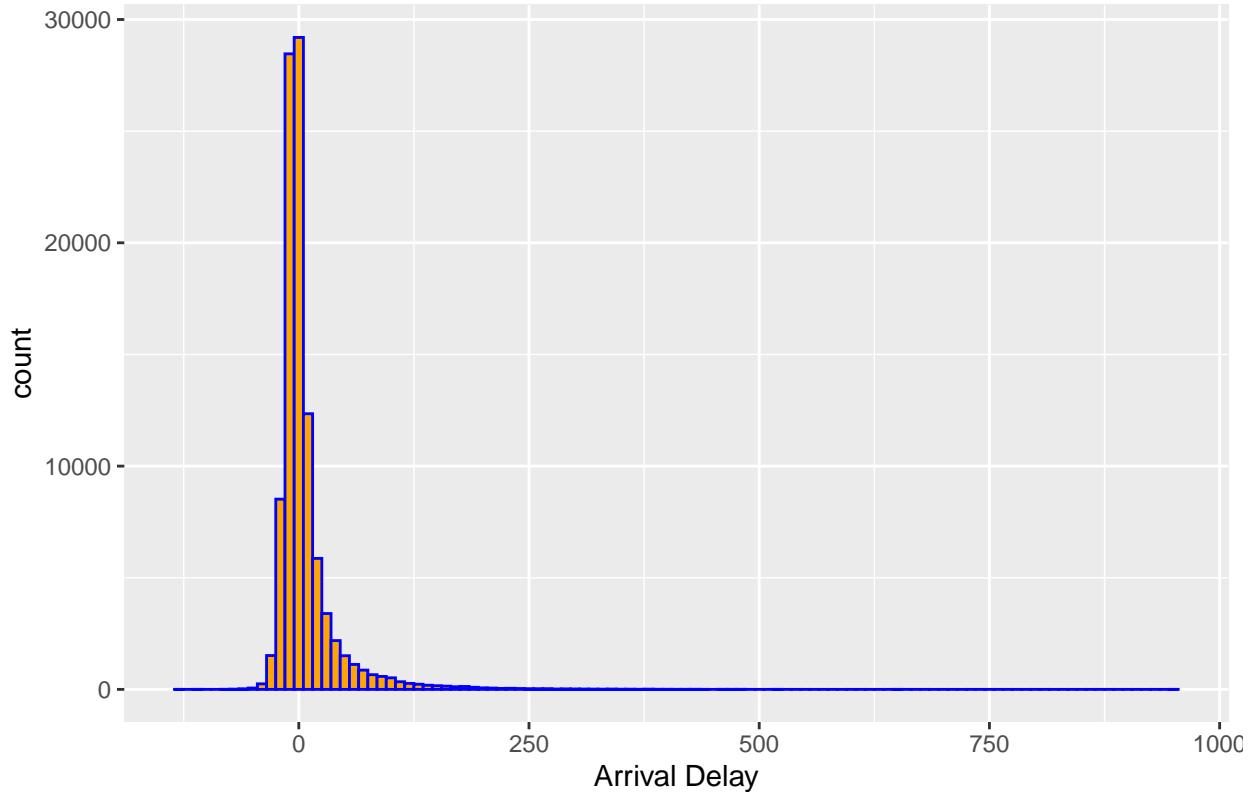
##                               Max.    :1.000000   Max.    :875.000   Max.    :412.0000
##
##      NASDelay      SecurityDelay      LateAircraftDelay
##  Min.    : 0.000  Min.    : 0.00000  Min.    : 0.000
##  1st Qu.: 0.000  1st Qu.: 0.00000  1st Qu.: 0.000
##  Median : 0.000  Median : 0.00000  Median : 0.000
##  Mean   : 2.481  Mean   : 0.01412  Mean   : 4.569
##  3rd Qu.: 0.000  3rd Qu.: 0.00000  3rd Qu.: 0.000
##  Max.   :367.000  Max.   :199.00000  Max.   :458.000
##

```

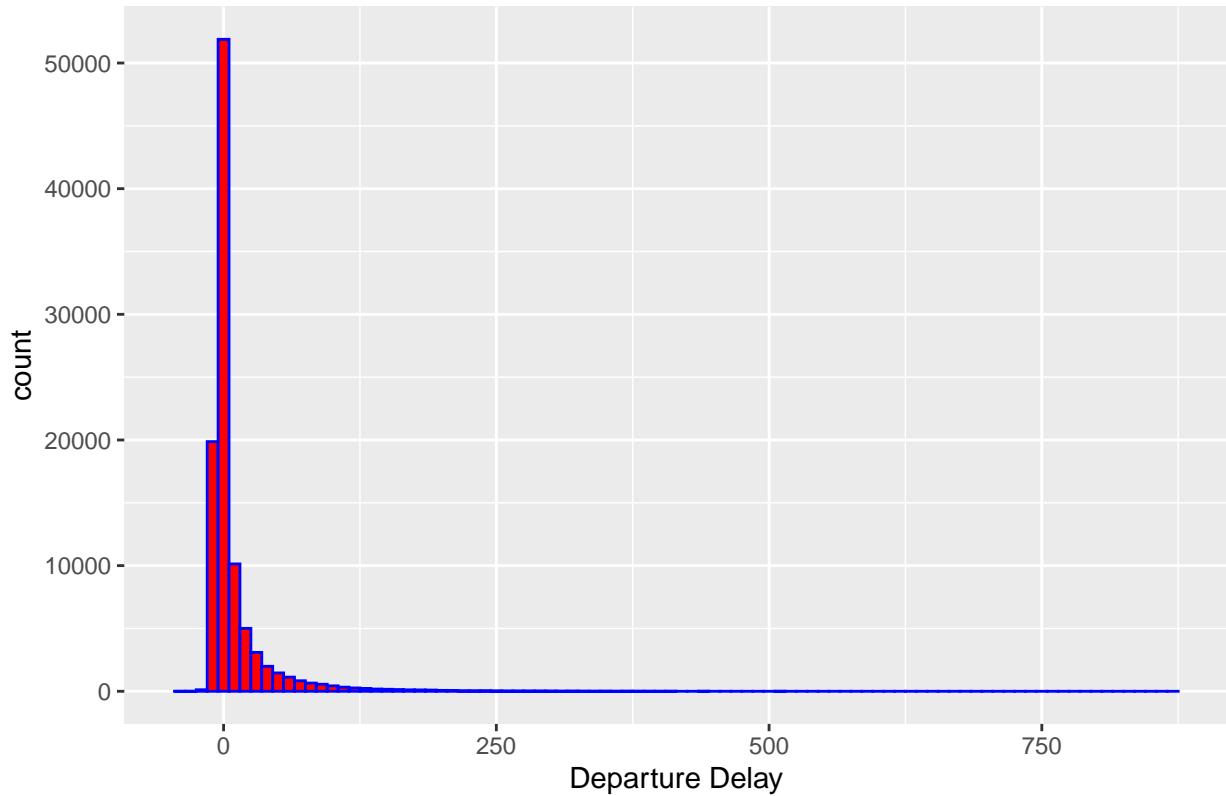
From the summary statistics of all the columns, we see that Arrival and Departure Delays are mostly 0, with a mean delay of less than 10 minutes. We also notice that on an average, LateAircraftDelay is the highest followed by Carrier Delay. Although these cannot be considered absolute terms but give a good idea about the cause of delays.

Next we'll try to see a graphical view of the distribution of arrival and departure delays.

Distribution of Arrival Delays

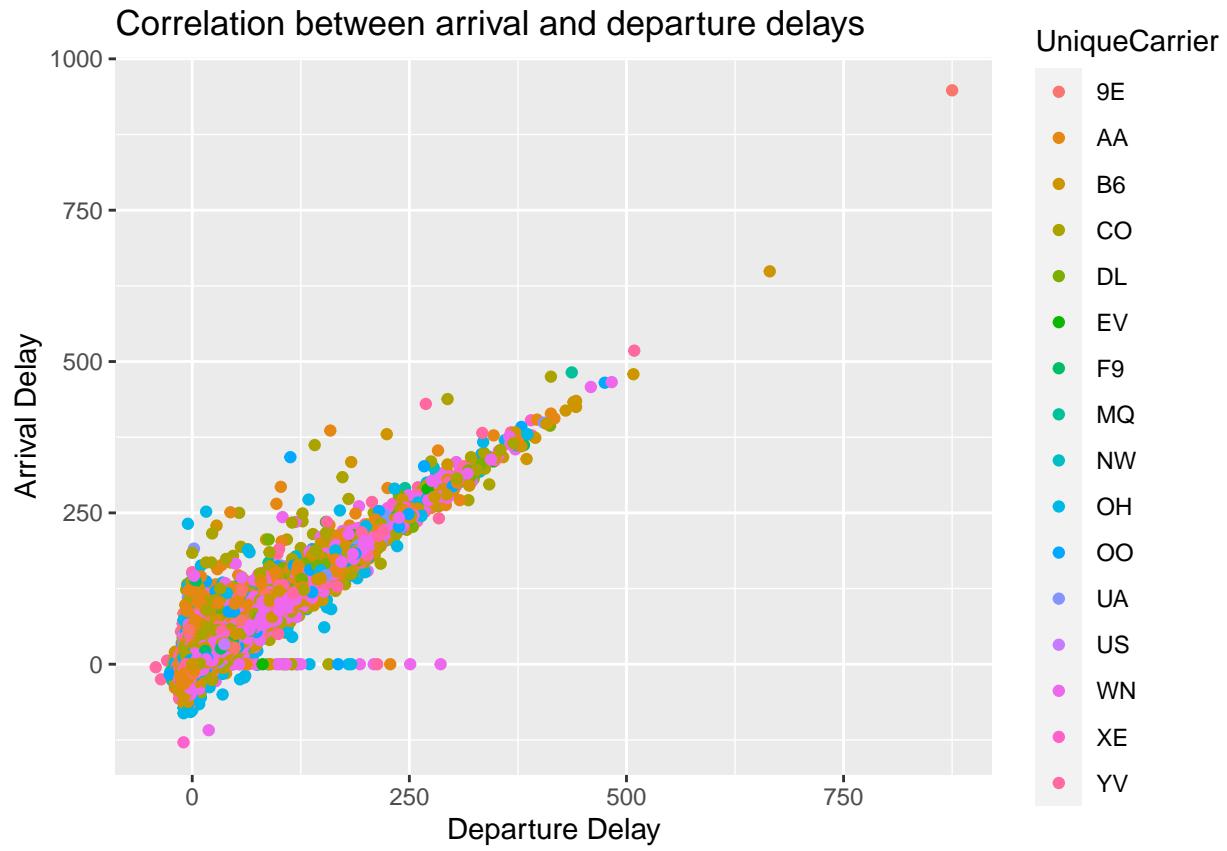


Distribution of Departure Delays



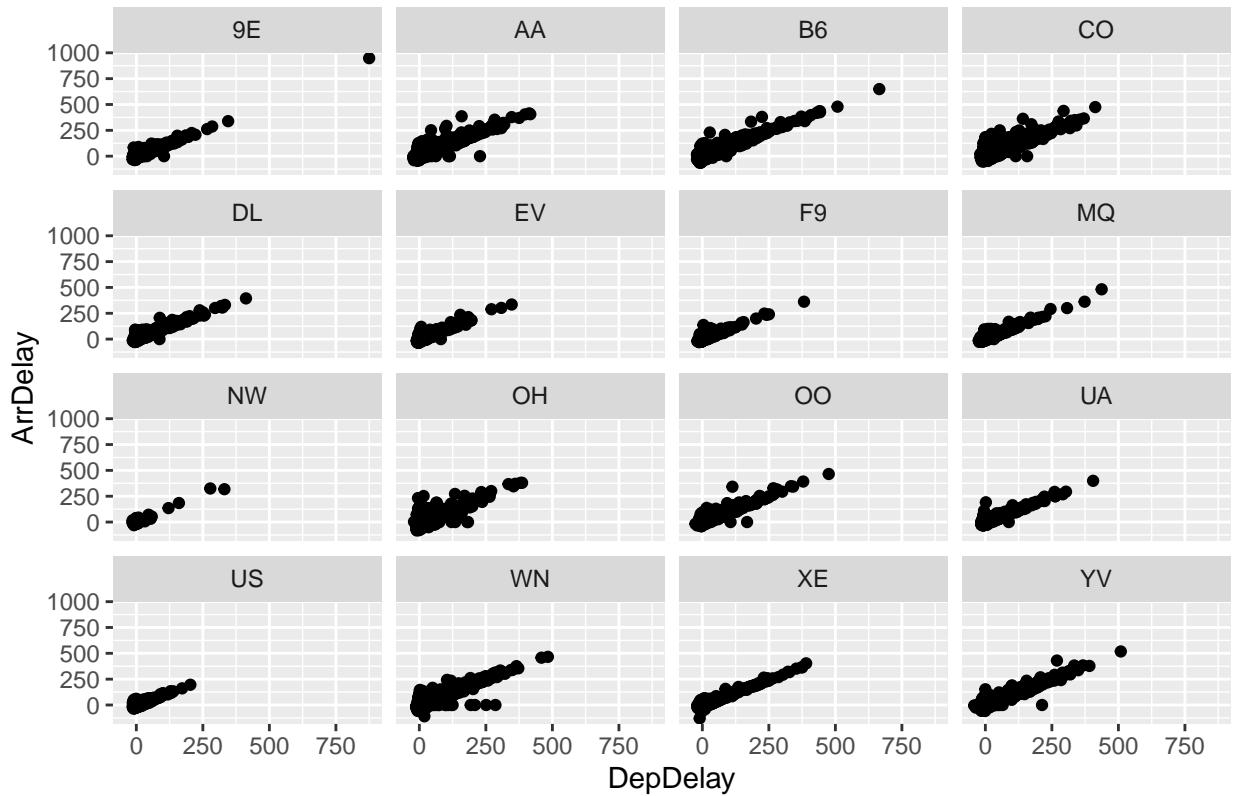
As expected, they're both centred around 0, with negative values showing high dominance too, indicating before time flights (good thing!).

Next, we try to see the correlation between the arrival and departure delays for different airline carriers.



Although the plot looks a little messy given the number of different carriers available, the basic idea that comes out is that Arrival Delays increase with Departure Delays, which obviously makes sense. A flight that leaves late, is expected to arrive late as well (unless the pilot is a pro and the external factors aid the aircraft).

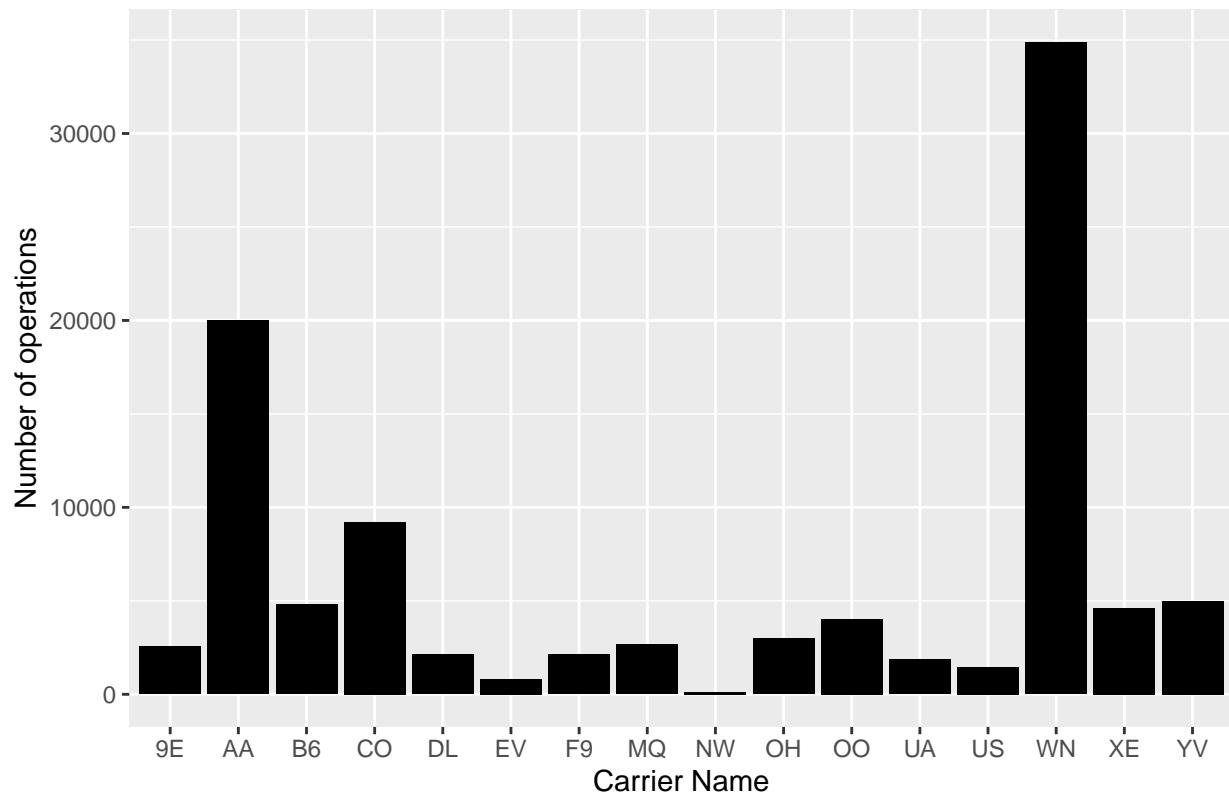
Arrival delay and departure delay correlation by carrier



Breaking down the previous visual by the different carriers individually, we see that all of them depict a positive correlation between the Arrival and Departure delays, indicating that none of them could cover up the departure delay during the airtime, except for a few outliers of course.

Next... Lots of carriers, lots of operations? We checked the number of operations per carrier to find out the big players.

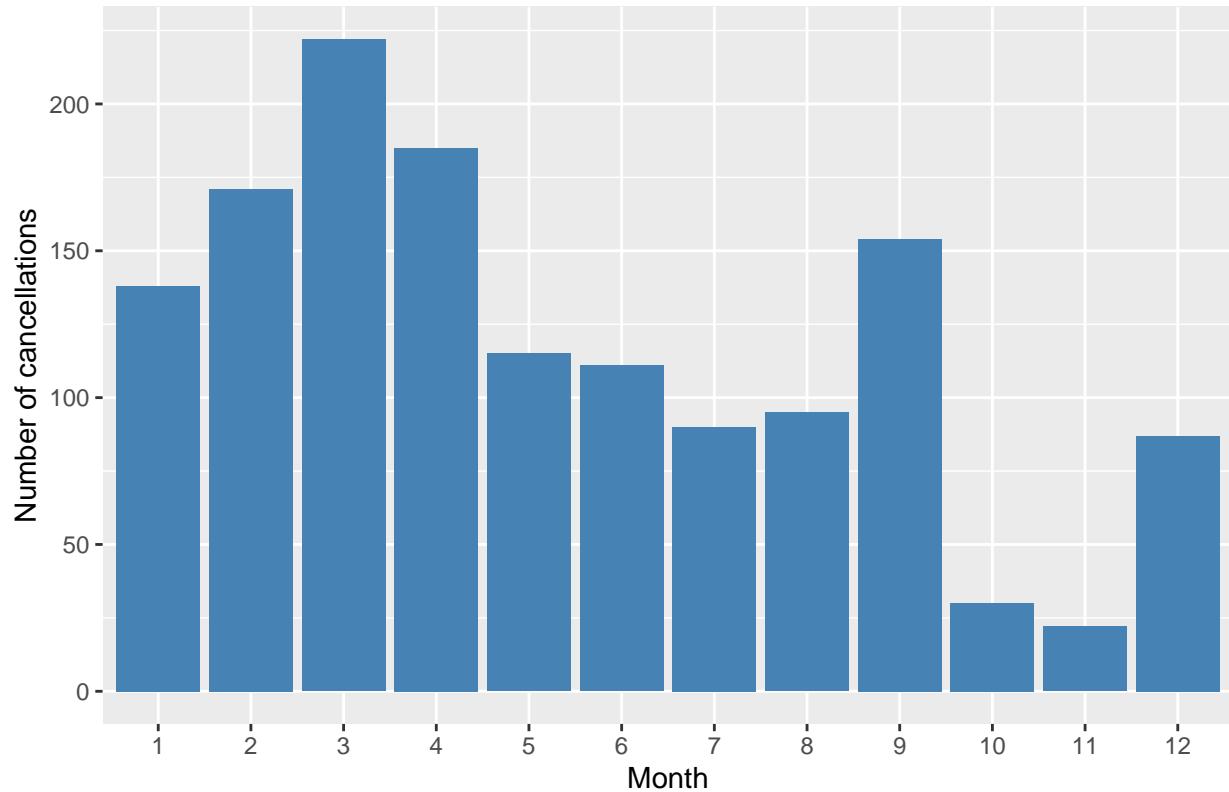
Number of operations by Carrier



WN (Southwest Airlines), AA (American Airlines) and CO (Copa Airlines) seem to be the biggest players with Southwest and American Airlines having 35,000 and 20,000 operations respectively.

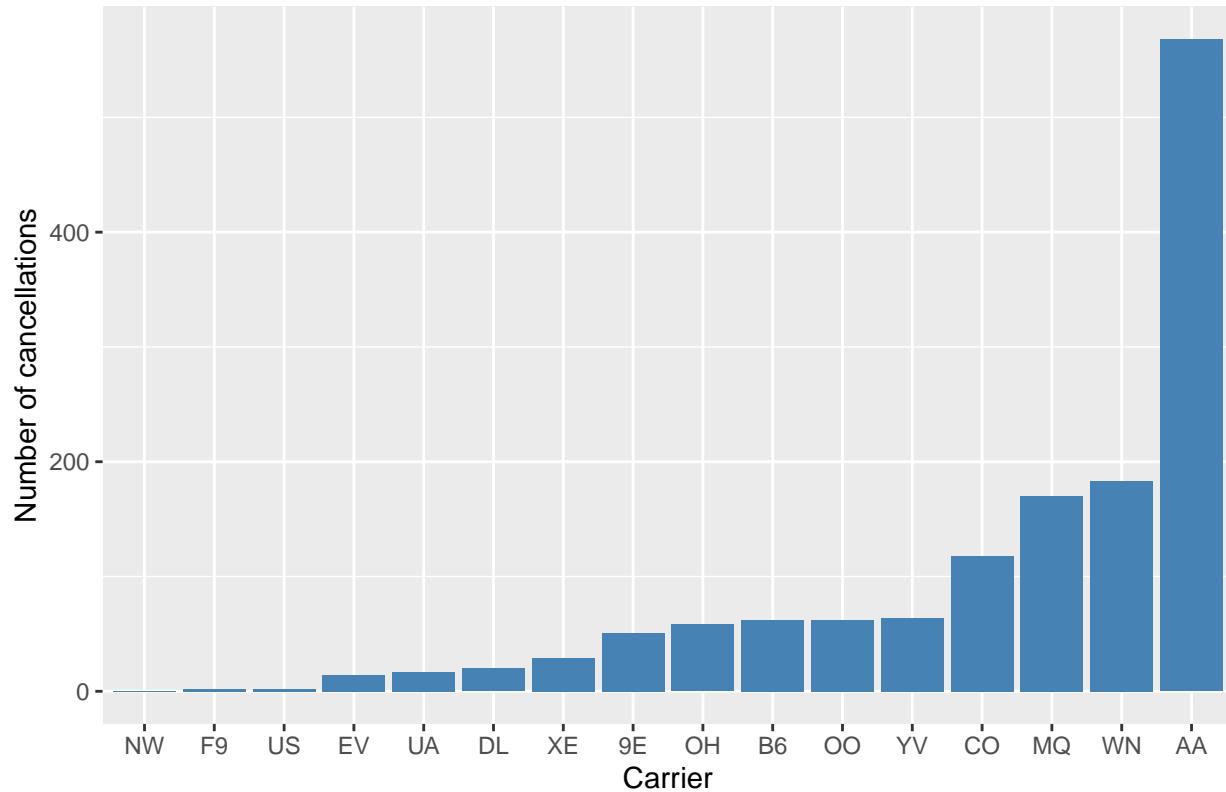
So more the number of operations, more the expected cancellations? We tried to answer this in the following visuals.

Number of cancellations each month



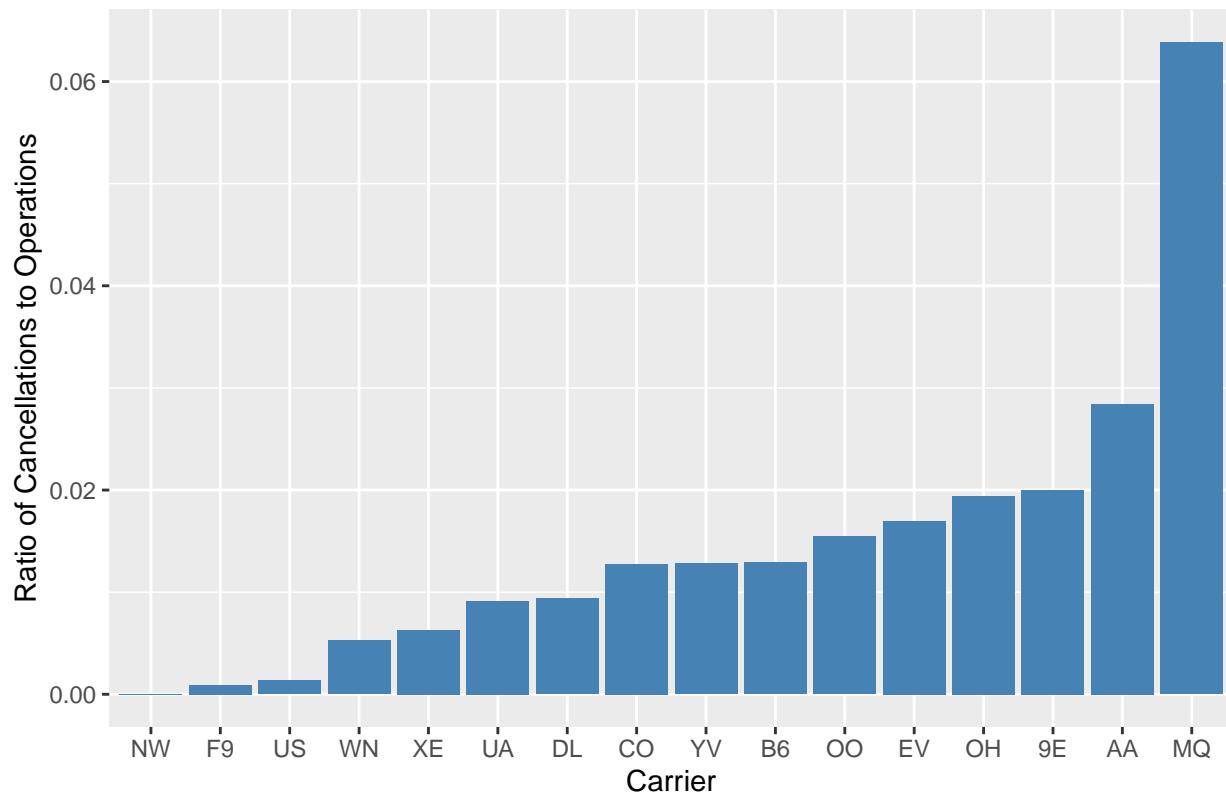
First we see that most of the cancellations happen during March, with another local maxima in September.

Number of Cancellations for Each Carrier



Next we see that most of the cancellations are by American Airlines, with Southwest Airlines (WN) and Envoy Air (MQ) as distant second and third positions. But can these numbers be taken absolutely? Not really, as the performance of an airline based on the number of cancellations also depends on the total number of operations that the airlines has. So next we see the ratio of the cancellations to the operations.

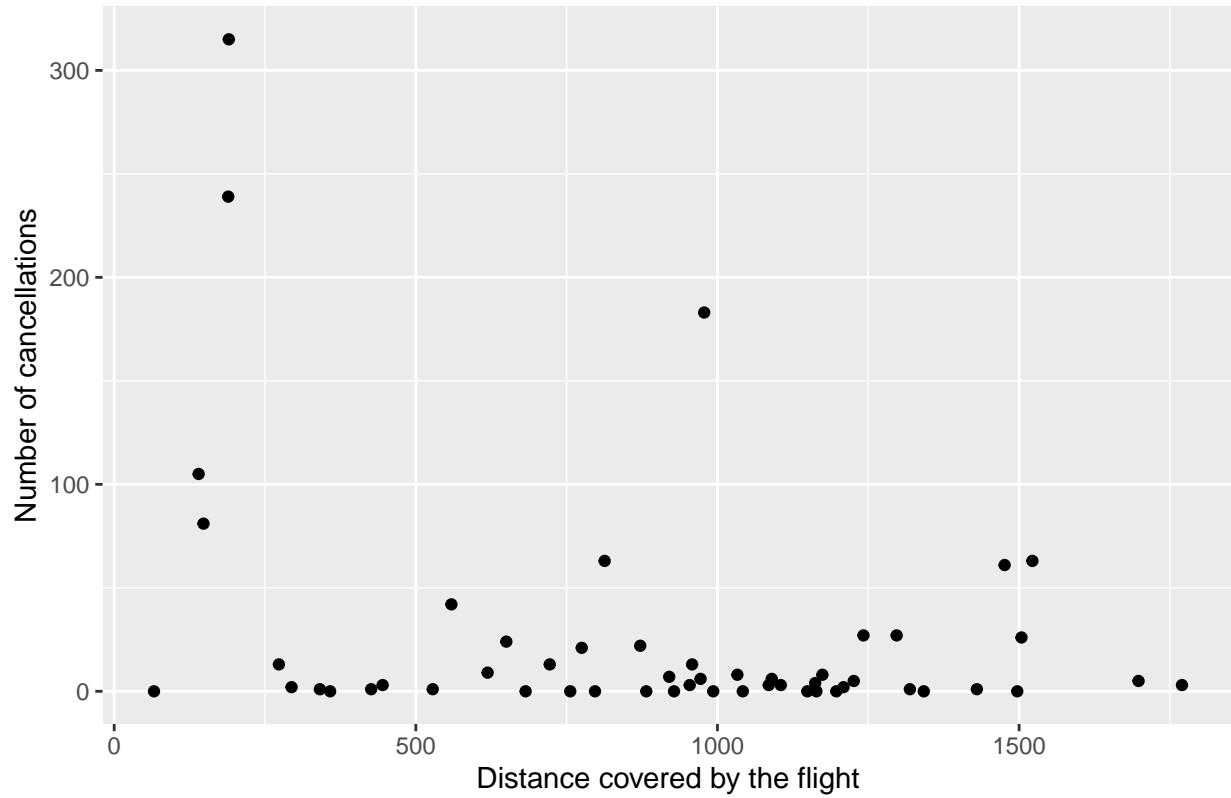
Number of Cancellations per Operation for Each Carrier



And this visual shows that AA is actually not the worst as MQ (Envoy Air) has much more cancellations per operation as compared to any other airlines, with American Airlines a distant second.

Do the cancellations depend on the distance between the origin and the destination?

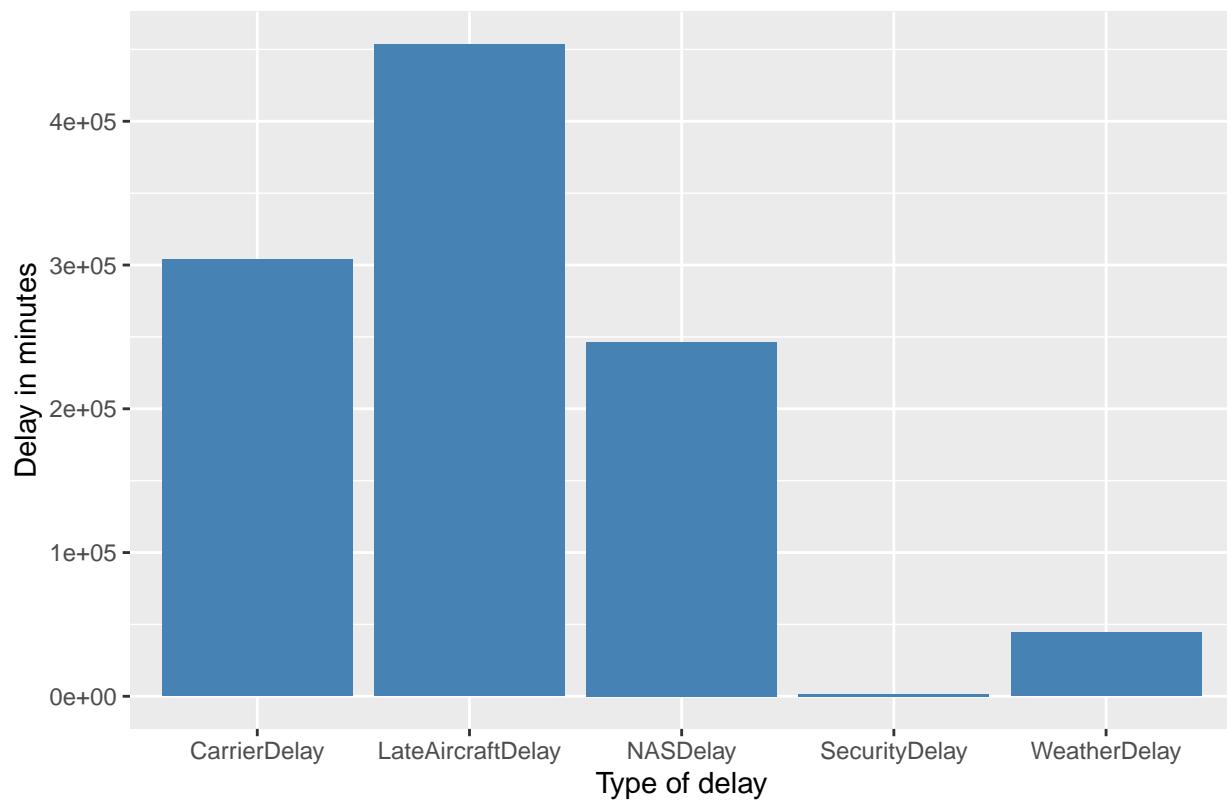
Number of Cancellations vs Distance Covered by the Flight



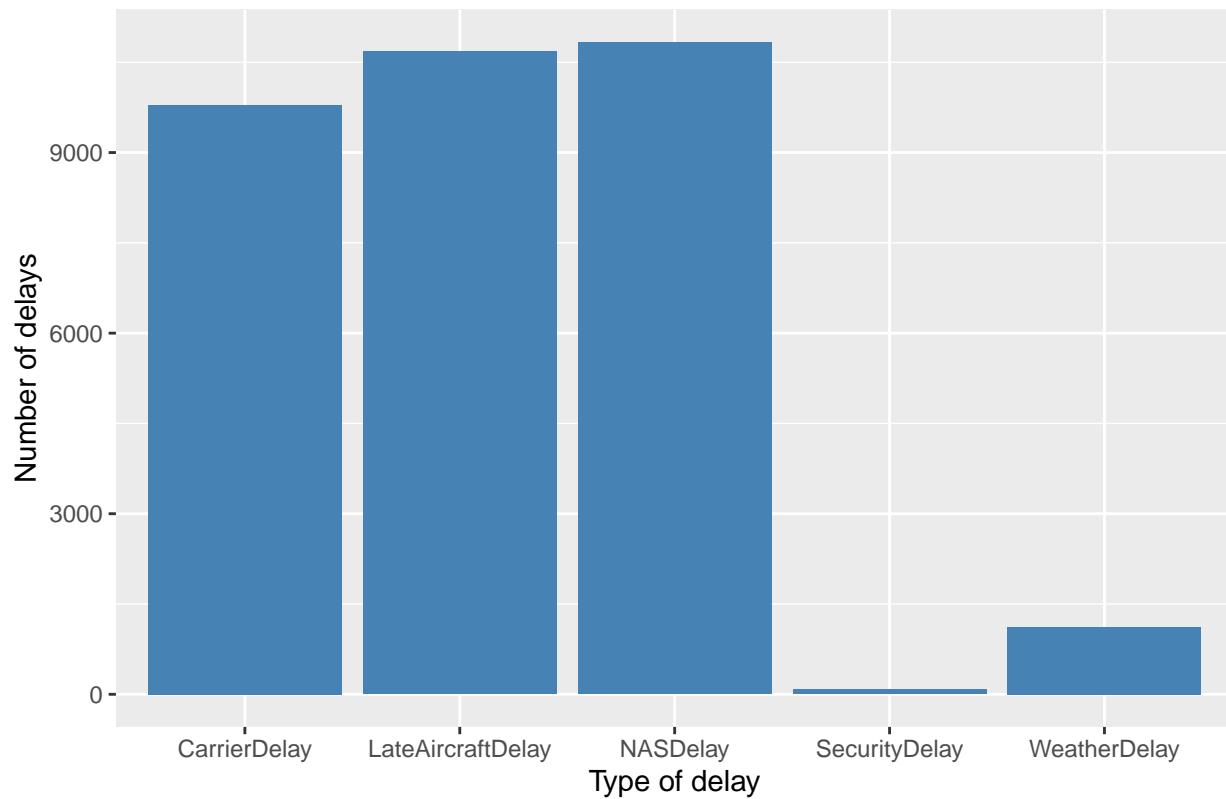
Yes, they do. With lower distances (mostly flights to and from Dallas), we see very high number of cancellations (ignoring some outliers near the distance of 1000 kms). This makes sense as these low distance flights are rather expensive as compared to other modes of transportation and hence are very empty, leading to cancellations.

Moving on, we tried to check the distribution of different Delays. Particularly, the number of delays and the delay time under different categories.

Total delay time in mins across different delay types



Number of delays recorded across different delay types



Although LateAircraftDelay in minutes is the highest, it is not the most frequent. NASDelays (National Airspace System) delays are the most frequent but with LateAircraftDelay as a close second. So overall, delays can largely be attributed to LateAircraftDelays or CarrierDelays based on the distribution above.

We also tried to find patterns in air traffic around Austin Airport at different times of the day.

Fig1Scheduled Departure by Hour

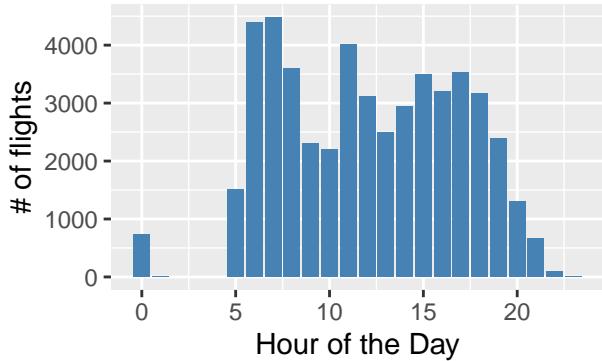


Fig2Actual Departure by Hour

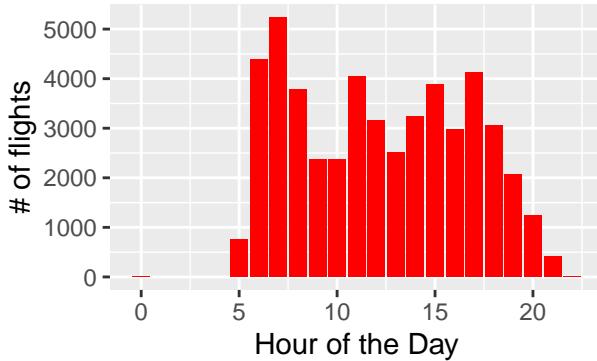


Fig3Scheduled Arrival by Hour

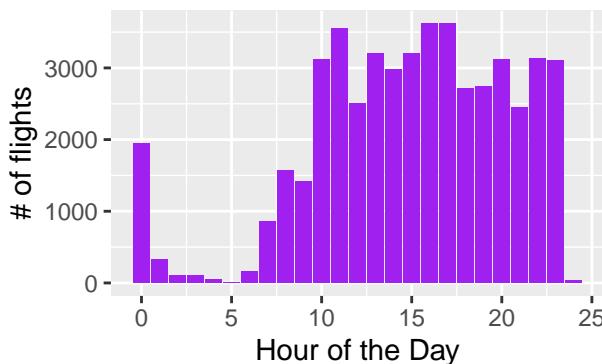
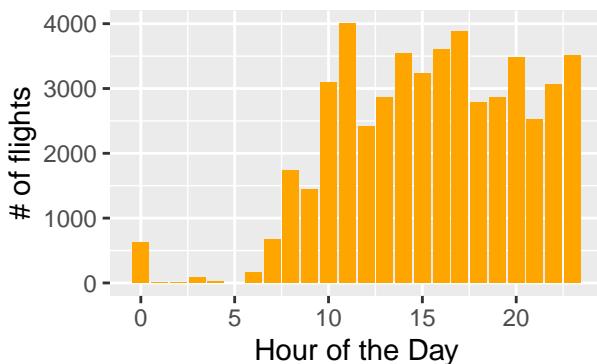


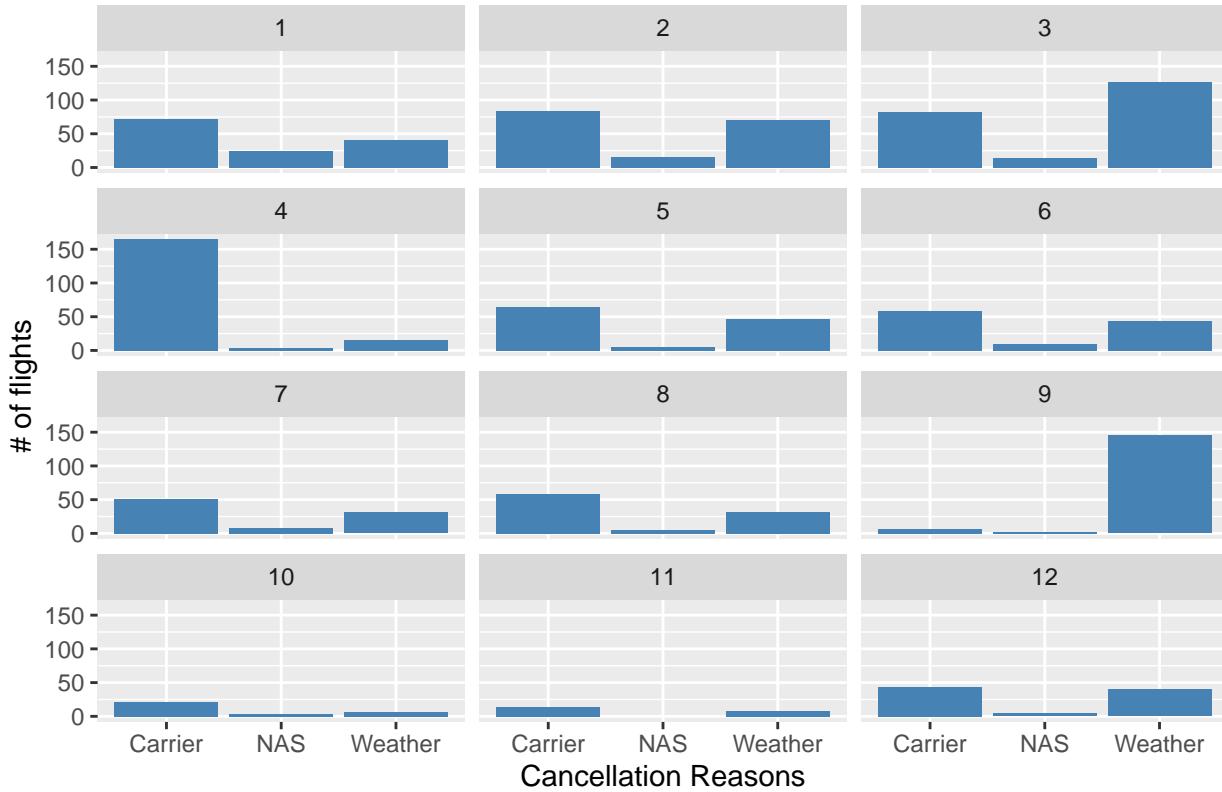
Fig4Actual Arrival by Hour



Outgoing flight traffic is very high between the morning hours of 5 AM and 8 AM while incoming air traffic is maximum around 10 AM, with a constant high until 11 PM after that. Basically, 10 AM to 6 PM seems to be the busiest time at ABIA with a very high number of both arrivals and departures.

Lastly, we looked at distribution of cancellations due to different reasons over the months.

Cancellation Reasons by Month



Weather related cancellations seem significant in every month with peaks in September and March. This could be due to inclement weather conditions in Texas in these months for 2008 due to a very large number of tornadoes and hurricanes.

Key Takeaways- 1. Since 2008 was a year with very extreme weather conditions, we see a lot of weather related delays and cancellations in specific months. 2. Most of the delays however, are due to Late Aircraft and Carriers. 3. Southwest Airlines has the maximum number of operations followed by American Airlines, but American airlines has lot more cancellations as compared to any other airline. 4. However, the cancellations per operation are highest for Envoy Air with 7 cancellations per 100 operations. 5. The number of cancellations are also because of the distance as shorter distance flights have the most cancellations (to and from Dallas). 6. The hours between 10 AM to 6 PM are the busiest hours at ABIA wrt air traffic and passenger traffic.

Portfolio Modeling

Step 1 : Loading the required libraries

Mosaic Library - used to make many common tasks fit into a common template
Quantmod - Used to get the stock values for the financial portfolios
foreach - Used to run the foreach loop for bootstrapping

Step 2 : Selecting of ETFs

The goal is to select a diverse set of ETFs which include: Safe: SPY - One of the largest and safest ETFs, tops the list in terms of AUM and trading volume IVV - iShares Core S&P 500 ETF tracks the S&P 500 (top holdings include Apple, Microsoft, Amazon, Facebook) Risky: SVXY - Short VIX Short Term, there

was a decline for this ETF couple of years back. This is an unusual ETF since the performance is dependent on the market volatility, not security. Aggressive: IHI (iShares US Medical Devices) - high risk and high return potential IGV(iShares Expanded Tech-Software) - ETF with high risk and high return potential

Get symbols function uses the quantmod library and gets the values of the prices from the specified date

```
## 'getSymbols' currently uses auto.assign=TRUE by default, but will
## use auto.assign=FALSE in 0.5-0. You will still be able to use
## 'loadSymbols' to automatically load data. getOption("getSymbols.env")
## and getOption("getSymbols.auto.assign") will still be checked for
## alternate defaults.
##
## This message is shown once per session and may be disabled by setting
## options("getSymbols.warning4.0"=FALSE). See ?getSymbols for details.
```

Step 3 : Preprocessing and trend monitoring

-adjusting the splits and the dividends - combine close to close changes in a single matrix - Plot close to close changes - Look at market returns over time

```
## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/SPY?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query1.finance.yahoo.com/v7/finance/download/SPY?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/IVV?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/IVV?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query1.finance.yahoo.com/v7/finance/download/SVXY?
## period1=-2208988800&period2=1629072000&interval=1d&events=div&crumb=cgIOQ9G/R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query1.finance.yahoo.com/v7/finance/download/SVXY?
```

```

## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query1.finance.yahoo.com/v7/finance/download/SVXY?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/IHI?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query1.finance.yahoo.com/v7/finance/download/IHI?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

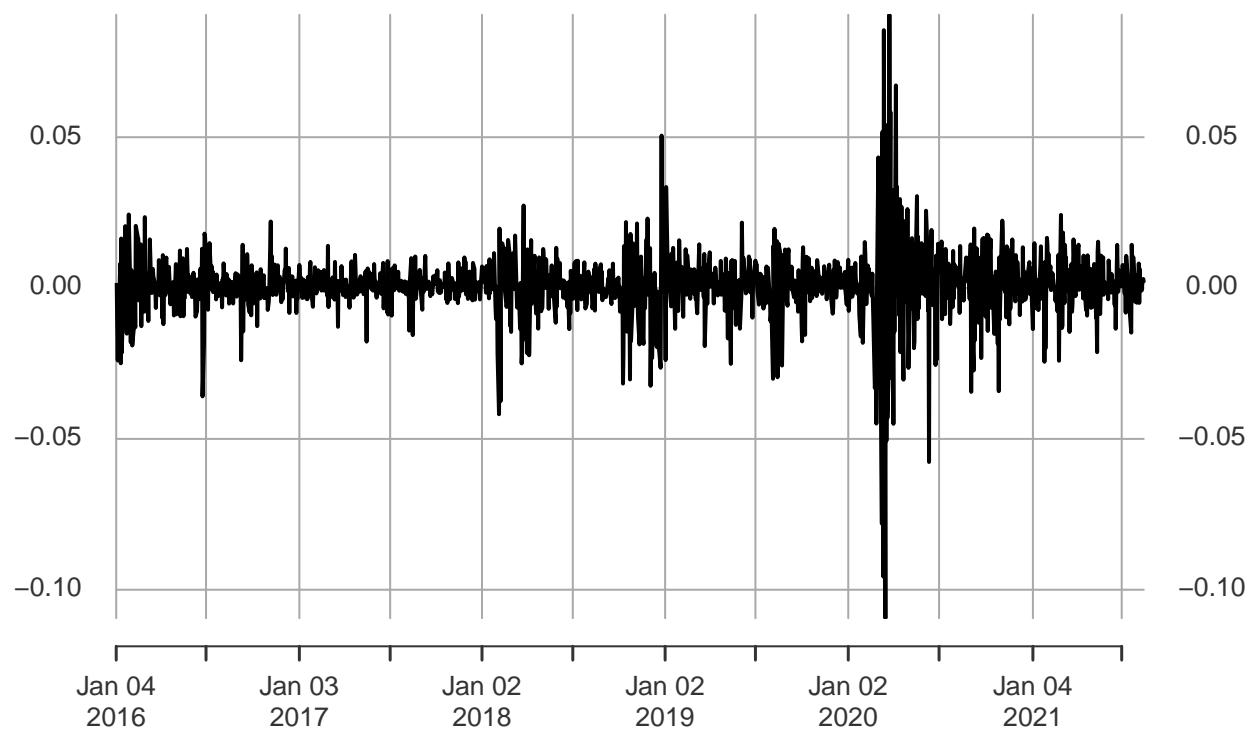
## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/IGV?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

## Warning in read.table(file = file, header = header, sep = sep,
## quote = quote, : incomplete final line found by readTableHeader
## on 'https://query2.finance.yahoo.com/v7/finance/download/IGV?
## period1=-2208988800&period2=1629072000&interval=1d&events=split&crumb=cgIOQ9G/
## R55'

```

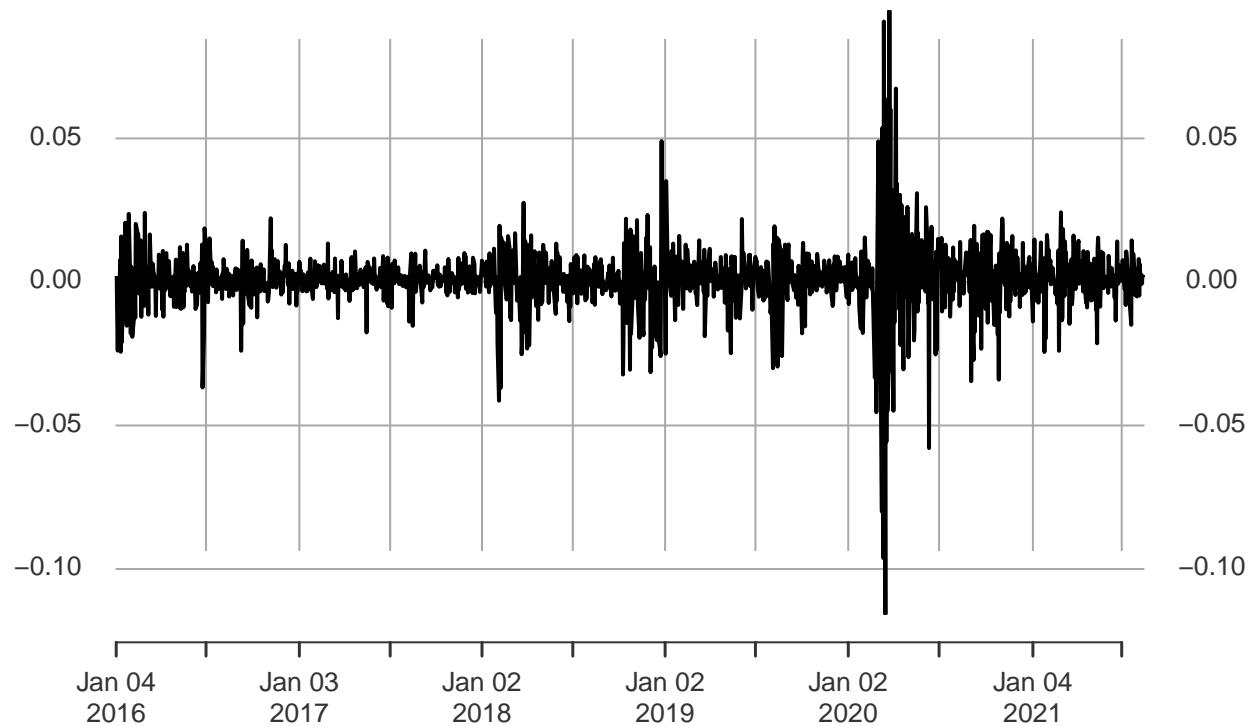
CICI(SPYa)

2016-01-04 / 2021-08-13



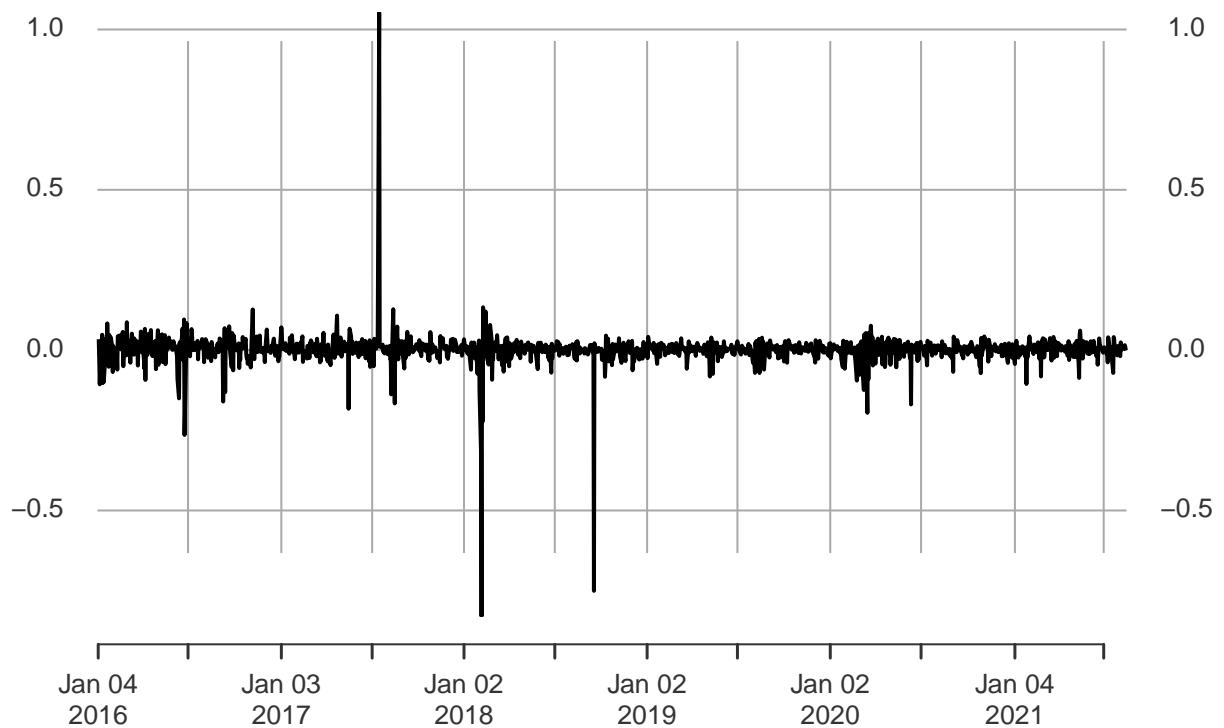
CICI(IVVa)

2016–01–04 / 2021–08–13



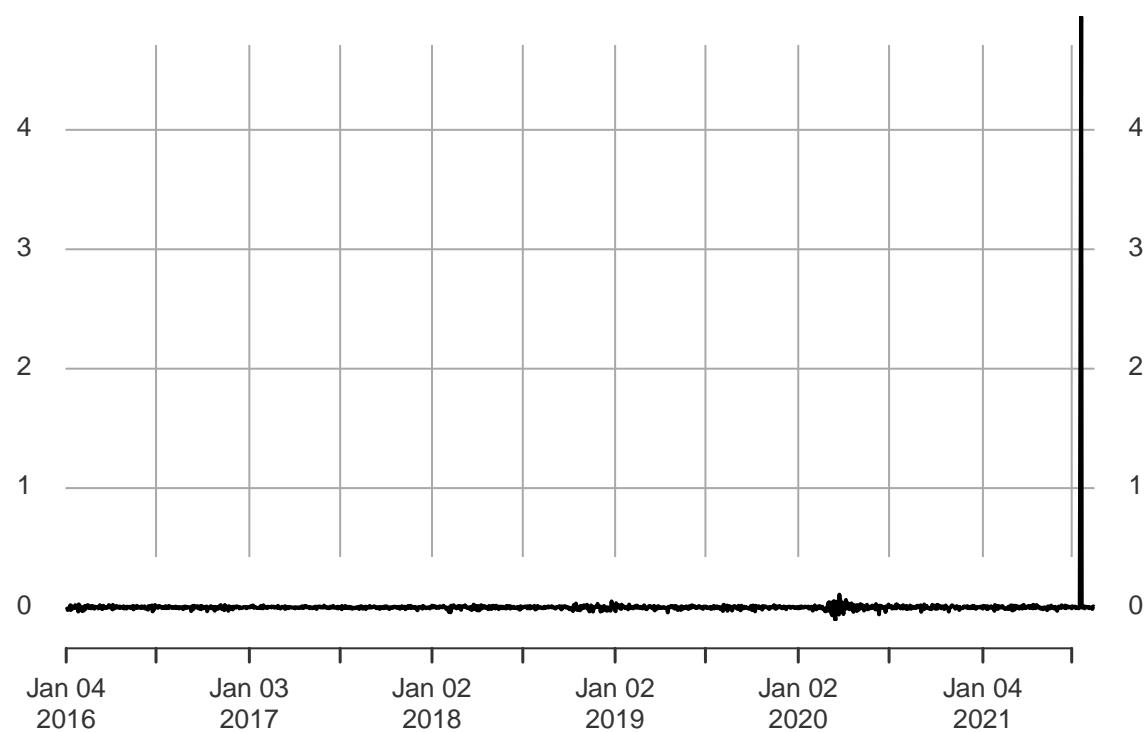
CICI(SVXYa)

2016–01–04 / 2021–08–13



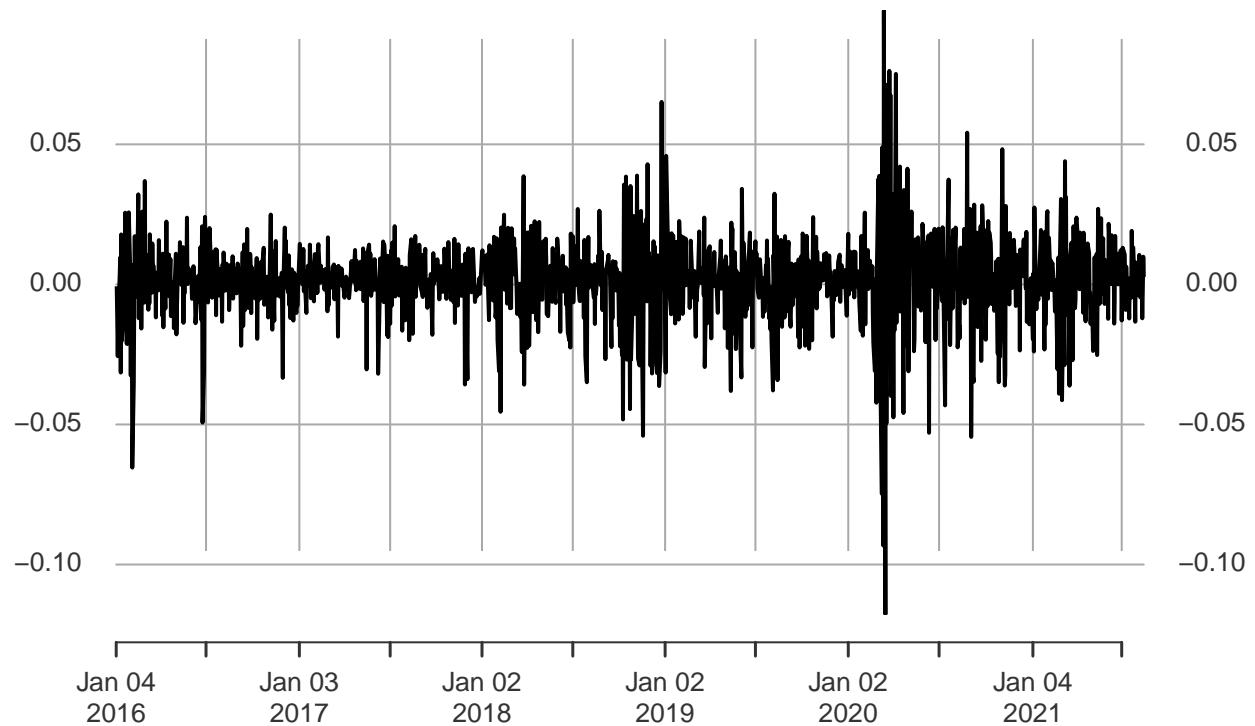
CICI(IHla)

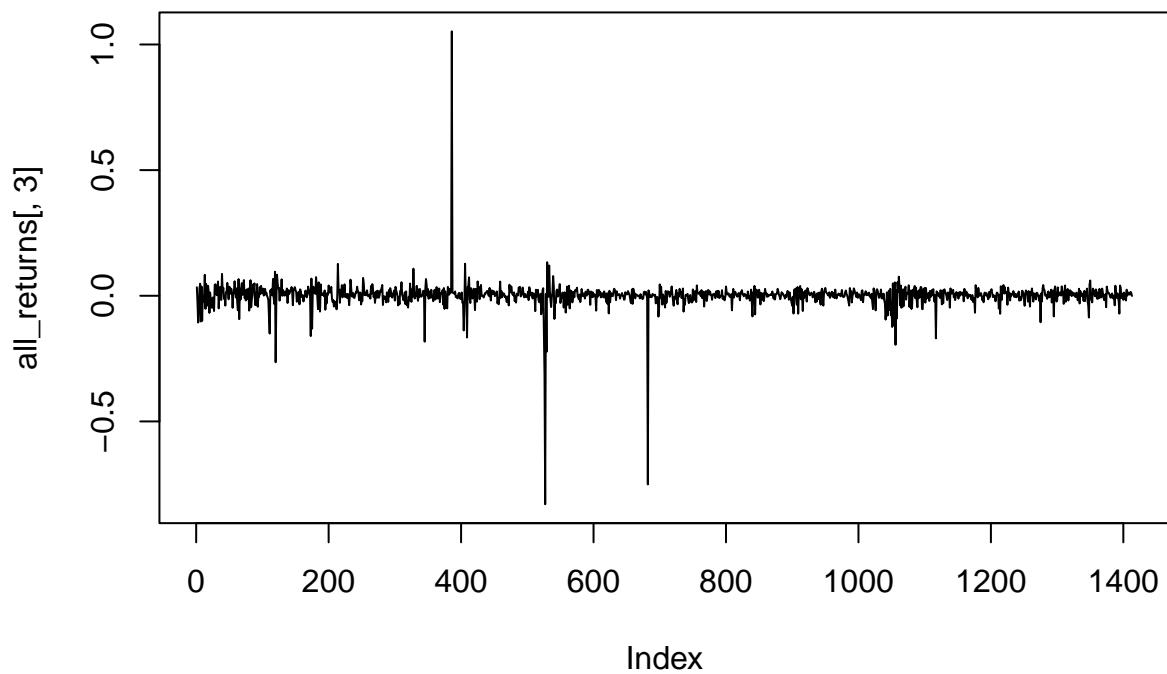
2016-01-04 / 2021-08-13



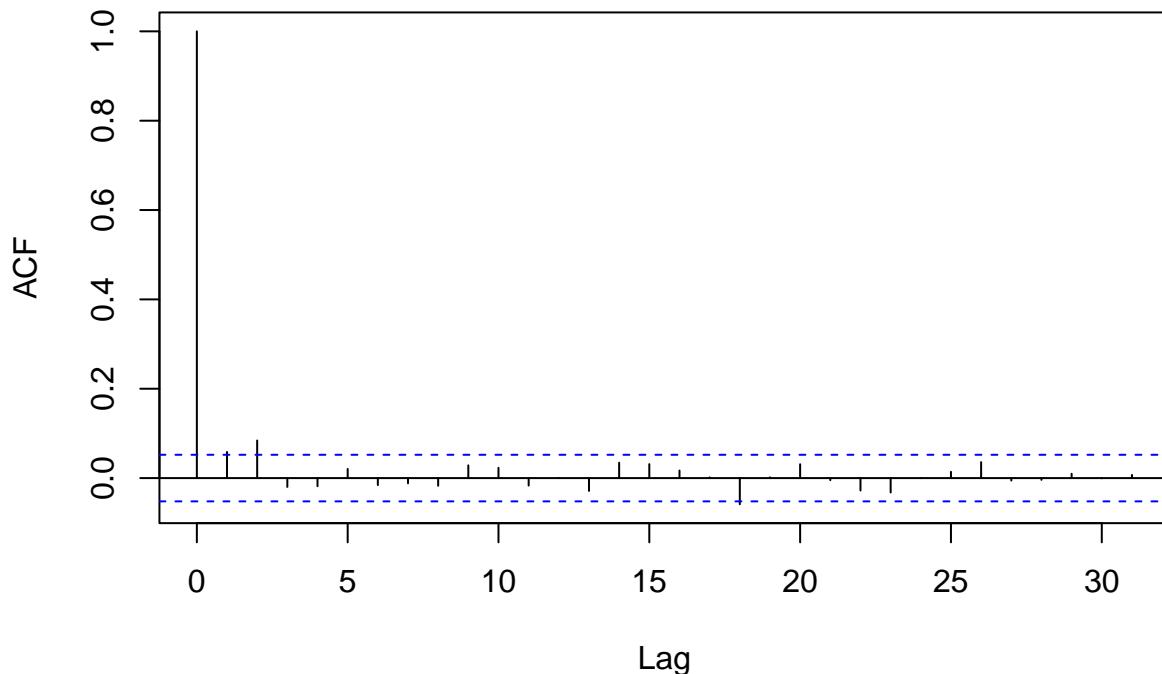
CICI(IGVa)

2016-01-04 / 2021-08-13





Series all_returns[, 3]

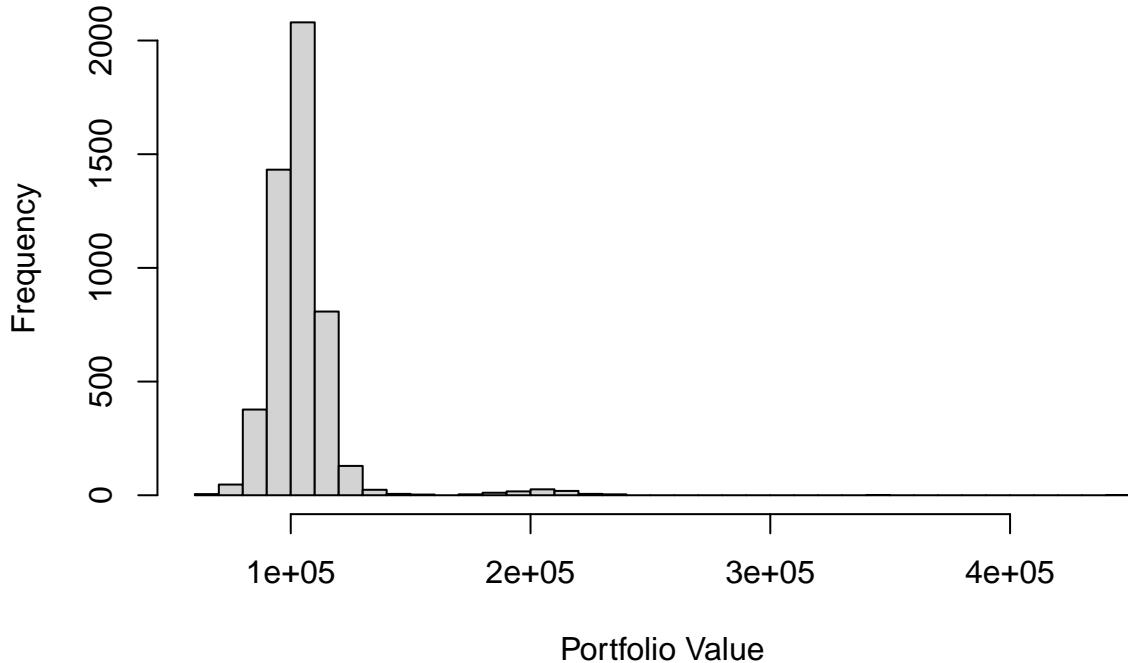


Interpretation: - ACF plots shows that there is no significant correlation between returns of today and any other day in past 30 days period - Most of the plots are quite volatile, thereby we need a more robust method in order to predict the returns. Hence, we would be using bootstrapping technique for the same.

Building model with equal weights to all stock types

Procedure: - Initialize the wealth to \$ 100,000 - Initially the total wealth is equal to the initial wealth - Let's consider that we are taking the number of days ahead as 30 - Let's simulate the values for 5000 times - Once we get the returns value for today, we calculate the total wealth using the formula (holdings + holdings*return_today) - Rebalancing the weight is an optional step

Equal weights Holdings Distribution



```
## [1] 100027.67 99828.63 99825.57 100096.32 100698.78 100484.59 100492.91
## [8] 91018.90 91262.03 91506.63 91190.68 90874.74 83262.86 83005.19
## [15] 81616.30 82377.20 83602.19 80102.04 81121.47 77860.33 78281.86
## [22] 77847.33 78504.83 78673.98 78160.33 78392.09 78860.76 79536.51
## [29] 78205.66 79494.59

##      5%
## -11426.25

##      25%
## -2706.492

##      50%
## 1990.406

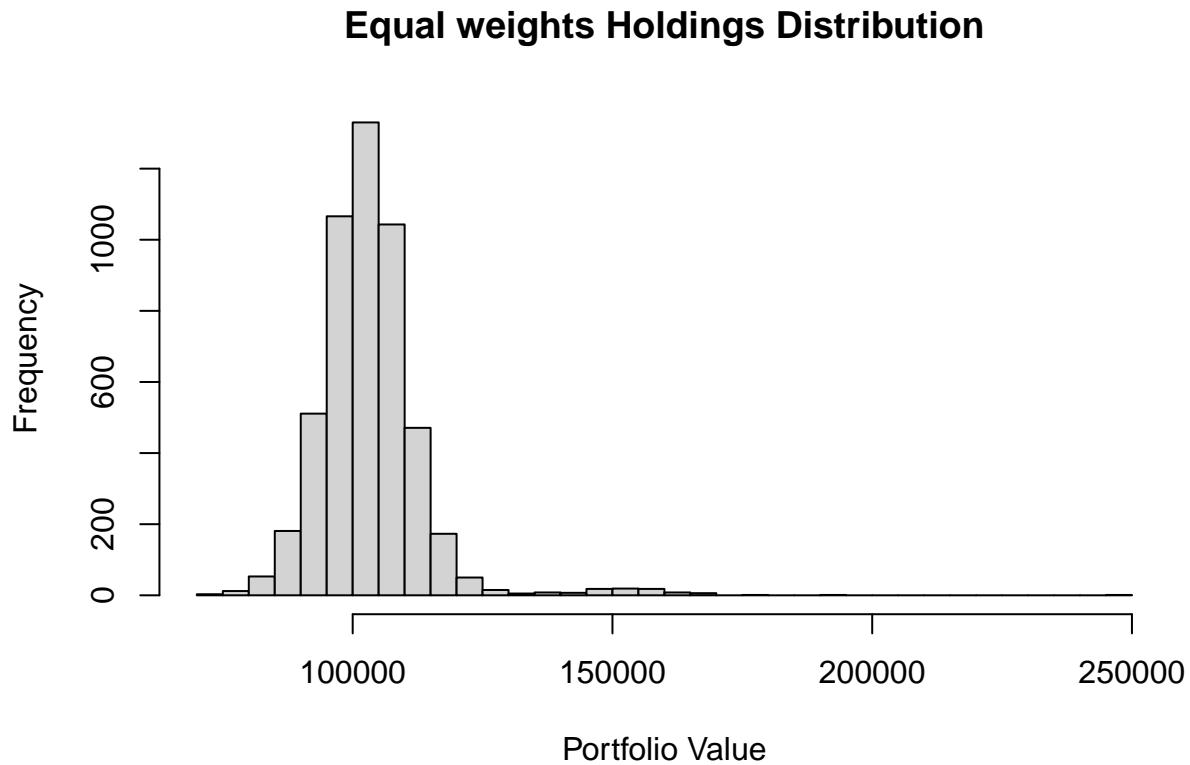
##      75%
## 6483.195

##      95%
## 14651.78
```

- The value of risk at 5% level is \$11426 (~11.4% of the initial capital)
- The value of risk at 25% level is \$2706 (~2.7% of the initial capital)
- At median level profit is \$1990 (~1.9% of the initial capital)
- At 75% level profit is \$6483 (~6.4% of the initial capital)
- At 95% level profit is \$14651 (~14.6% of the initial capital)

Building model with more weights to safe stocks

- Similar procedure as before just that we change the weights for each stock



```
## [1] 99910.91 99653.27 99671.90 99838.67 100206.01 99929.46 99810.53
## [8] 90316.97 90467.08 90774.34 90587.01 90484.78 83118.58 82972.43
## [15] 81724.59 82447.52 83180.40 80020.79 80907.70 78312.17 78744.24
## [22] 78384.82 78823.70 78904.04 78342.37 78422.90 78586.59 79195.03
## [29] 78003.99 78988.73

##      5%
## -8684.91

##      25%
## -2235.682

##      50%
## 1717.104

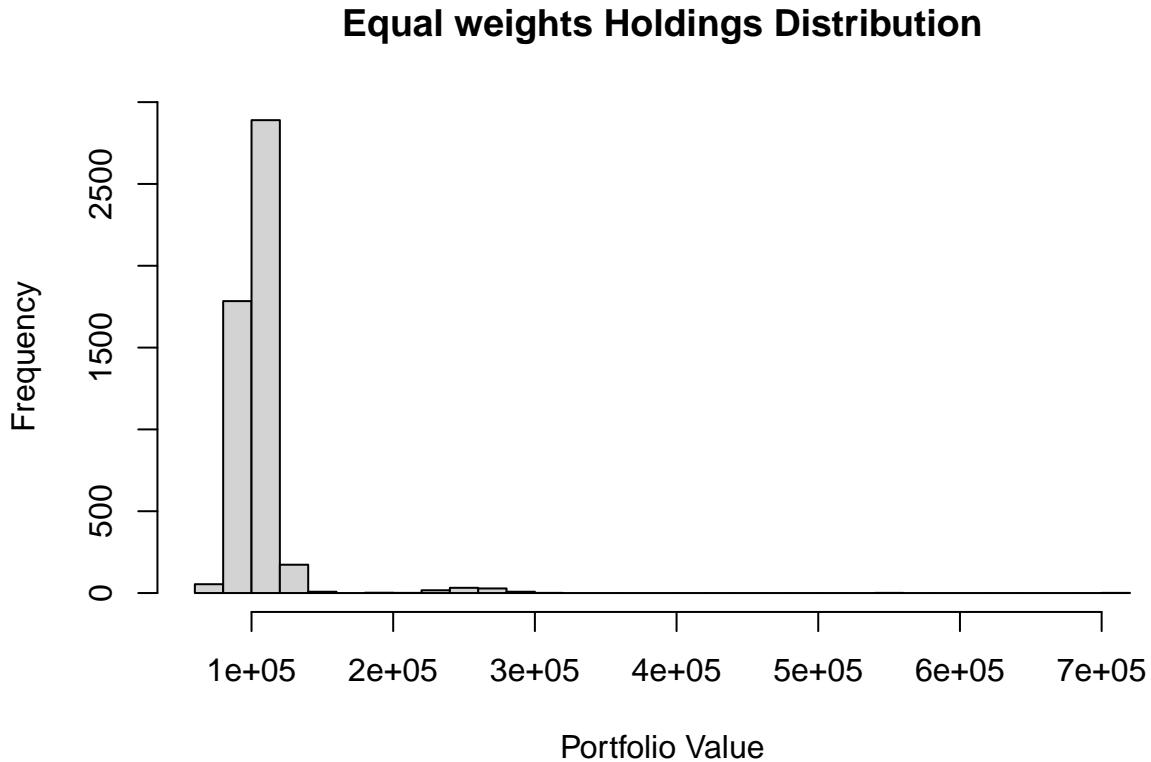
##      75%
## 5570.79

##      95%
## 12503.55
```

- The value of risk at 5% level is \$8684 (~8.6% of the initial capital)
- The value of risk at 25% level is \$2235 (~2.2% of the initial capital)
- At median level profit is \$1717 (~1.7% of the initial capital)
- At 75% level profit is \$5571 (~5.5% of the initial capital)
- At 95% level profit is \$12503 (~12.5% of the initial capital)

Building model with more weights to aggressive stocks

- Similar procedure as before just that we change the weights for each stock We expect that these results would be more volatile



```

## [1] 100155.60 99935.10 100081.13 100241.98 100913.62 100685.78 100715.79
## [8] 91533.29 91816.92 92088.56 91684.05 91120.55 83685.21 83412.00
## [15] 81973.96 82729.72 84031.65 80504.52 81562.12 78294.65 78789.65
## [22] 78310.85 79046.23 79175.21 78753.77 79064.08 79748.28 80365.04
## [29] 78979.53 80269.70

##      5%
## -11546.7

##      25%
## -2691.917

##      50%
## 2056.057

```

```

##      75%
## 6684.719

##      95%
## 15046.75

```

- The value of risk at 5% level is \$11546 (~11.5% of the initial capital)
- The value of risk at 25% level is \$2691 (~2.6% of the initial capital)
- At median level profit is \$2056 (~2% of the initial capital)
- At 75% level profit is \$6684 (~6.6% of the initial capital)
- At 95% level profit is \$15046 (~15% of the initial capital)

Conclusion:

Equal weights for all stock types - We see that the numbers here are moderate to high volatile and the worst case would be a loss of 11.4% and best case is 14.6% profit. Median is 1.9% profit

More weights for all safe stock types - We see that the numbers here are not too volatile and the worst case would be a loss of 8.6% and best case is 12.5% profit. Median is 1.7% profit

More weights for all aggressive stock types - We see that the numbers here are not too volatile and the worst case would be a loss of 11.5% and best case is 15% profit. Median is 2% profit

Q4 : Market Segmentation

```

##          chatter current_events travel photo_sharing uncategorized tv_film
## hmjoe4g3k      2            0     2            2            2       1
## clk1m5w8s      3            3     2            1            1       1
## jcsovtak3      6            3     4            3            1       5
## 3oeb4hiln      1            5     2            2            0       1
## fd75x1vgk      5            2     0            6            1       0
## h6nvj91yp      6            4     2            7            0       1
##          sports_fandom politics food family home_and_garden music news
## hmjoe4g3k      1            0     4            1            2       0       0
## clk1m5w8s      4            1     2            2            1       0       0
## jcsovtak3      0            2     1            1            1       1       1
## 3oeb4hiln      0            1     0            1            0       0       0
## fd75x1vgk      0            2     0            1            0       0       0
## h6nvj91yp      1            0     2            1            1       1       0
##          online_gaming shopping health_nutrition college_uni sports_playing
## hmjoe4g3k      0            1            17            0            2
## clk1m5w8s      0            0            0            0            1
## jcsovtak3      0            2            0            0            0
## 3oeb4hiln      0            0            0            1            0
## fd75x1vgk      3            2            0            4            0
## h6nvj91yp      0            5            0            0            0
##          cooking eco computers business outdoors crafts automotive art
## hmjoe4g3k      5   1            1            0            2       1       0       0
## clk1m5w8s      0   0            0            1            0       2       0       0
## jcsovtak3      2   1            0            0            0       2       0       8
## 3oeb4hiln      0   0            0            1            0       3       0       2
## fd75x1vgk      1   0            1            0            1       0       0       0
## h6nvj91yp      0   0            1            1            0       0       1       0

```

```

##          religion beauty parenting dating school personal_fitness fashion
## hmjoe4g3k      1      0      1      1      0           11      0
## clk1m5w8s     0      0      0      1      4           0      0
## jcsovtak3     0      1      0      1      0           0      1
## 3oeb4hiln     0      1      0      0      0           0      0
## fd75x1vgk     0      0      0      0      0           0      0
## h6nvj91yp     0      0      0      0      0           0      0
##          small_business spam adult
## hmjoe4g3k      0      0      0
## clk1m5w8s     0      0      0
## jcsovtak3     0      0      0
## 3oeb4hiln     0      0      0
## fd75x1vgk     1      0      0
## h6nvj91yp     0      0      0

## [1] 7882

## [1] 36

```

x

adult
art
automotive
beauty
business
chatter
college_uni
computers
cooking
crafts
current_events
dating
eco
family
fashion
food
health_nutrition
home_and_garden
music
news
online_gaming
outdoors
parenting
personal_fitness
photo_sharing
politics
religion
school
shopping
small_business
spam
sports_fandom

x
sports_playing
travel
tv_film
uncategorized

The data set contains 36 categories for tweets and has data for 7882 twitter followers of NutrientH20. Each data point represents the number of times each follower has posted a tweet which can be tagged to the mentioned categories. The above table represents all the tweet categories.

Data Cleaning

```
## [1] 32
```

We removed Spam and adult because we do not want to include these categories in our clusters.

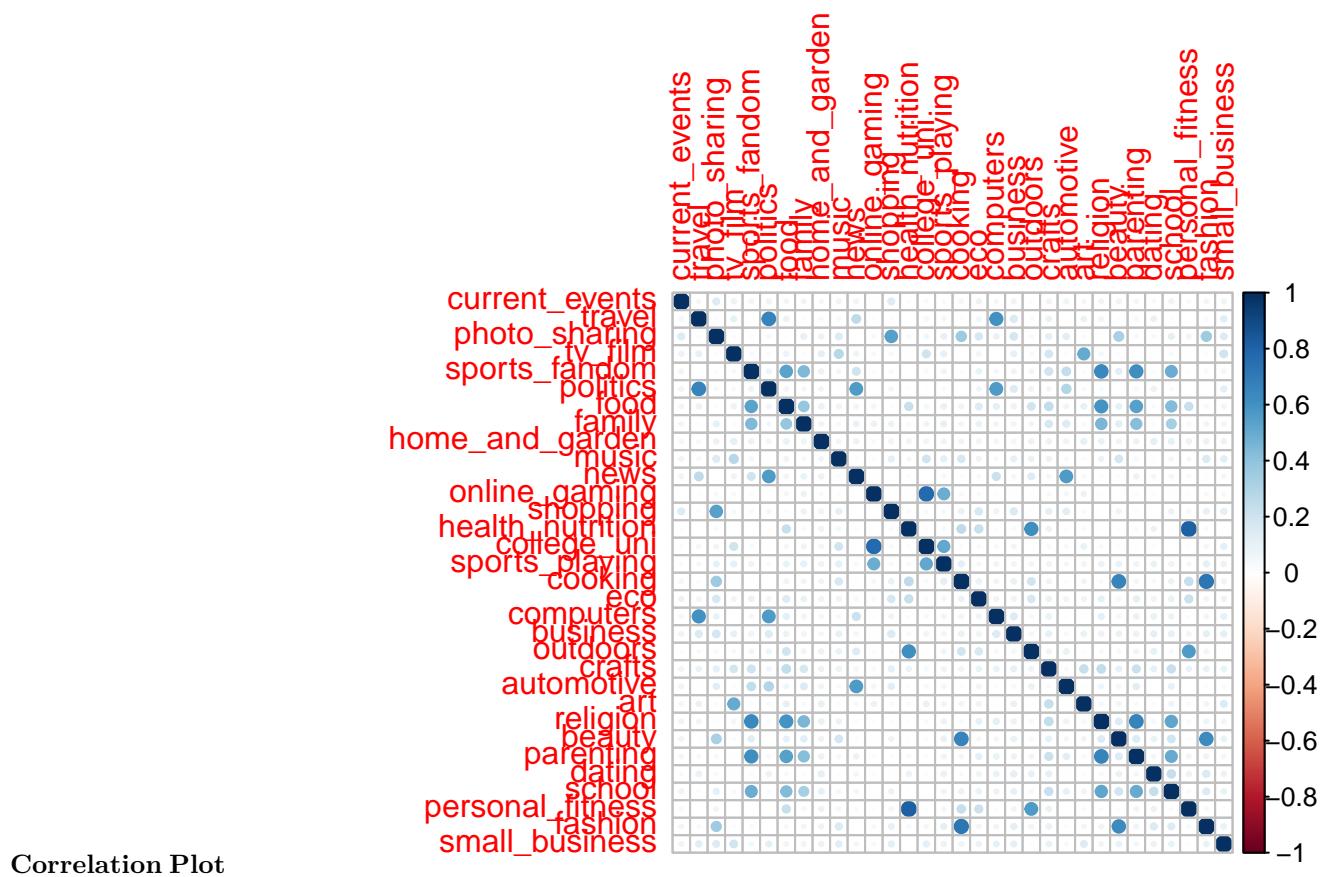
Chatter and uncategorized columns were removed because they would not help in clustering.

The cleaned dataset now contains 32 columns representing tweet categories.

Identify Top Categories

```
##   photo_sharing health_nutrition      cooking      politics
##       21256           20235       15750       14098
##   sports_fandom      travel college_uni current_events
##       12564           12493       12213       12030
## personal_fitness      food
##       11524           11015
```

From the above table, we can see that photo_sharing, health_nutrition, cooking, politics, and sports_fandom are the top 5 tweet categories.



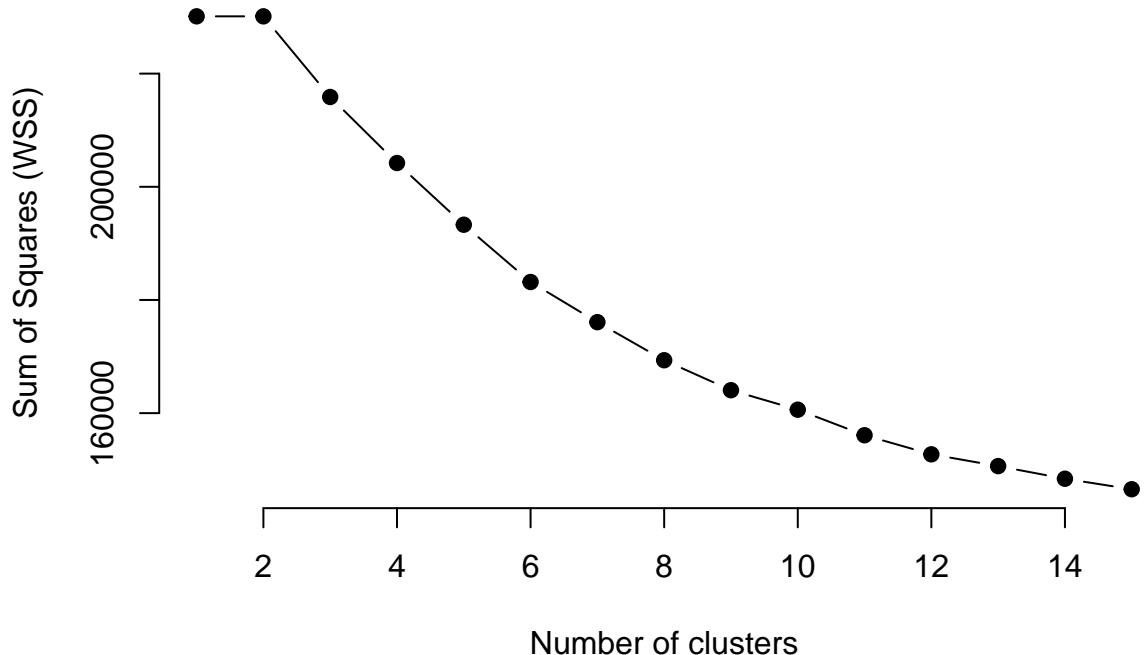
Correlation Plot

Several variables are correlated with each other. For example, online gaming and college university, and personal fitness and health nutrition are highly correlated.

Principal Component Analysis

```
## Importance of first k=2 (out of 32) components:
##          PC1      PC2
## Standard deviation   2.0987 1.66483
## Proportion of Variance 0.1376 0.08661
## Cumulative Proportion 0.1376 0.22426
```

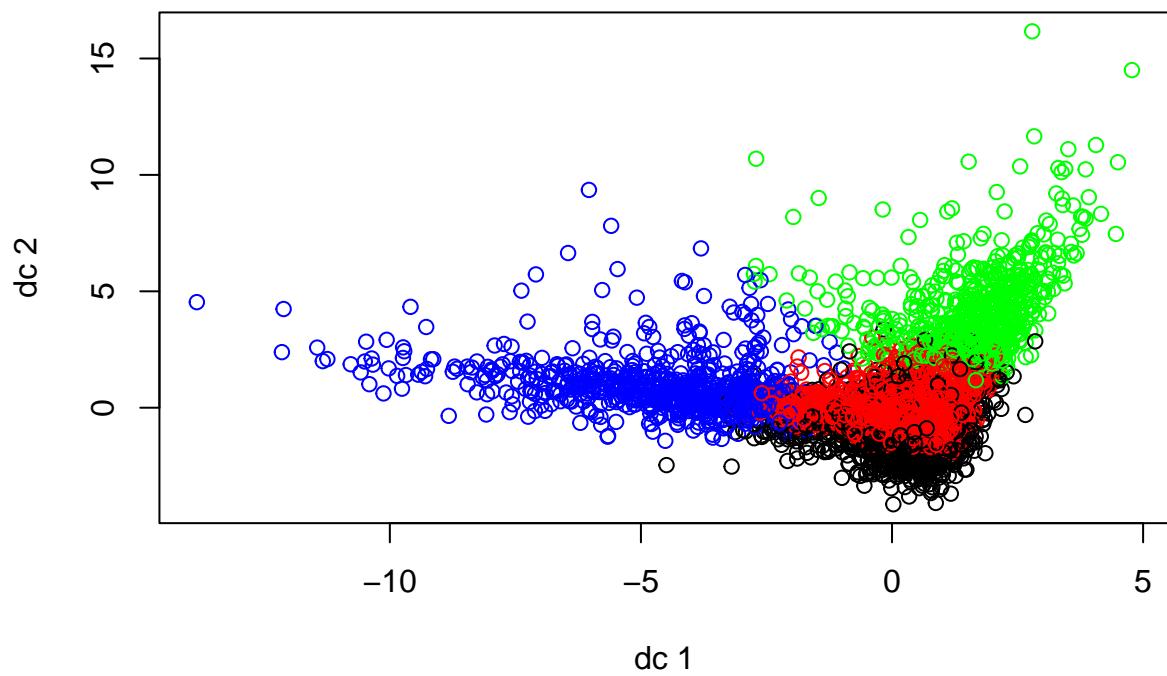
Principal Component Analysis is an exploratory data analysis tool. PCA will allow us to reduce the dimensionality of the data set (while preserving its variance) and understand the different types of tweets made by each customer. Let's consider the top 2 principal components.

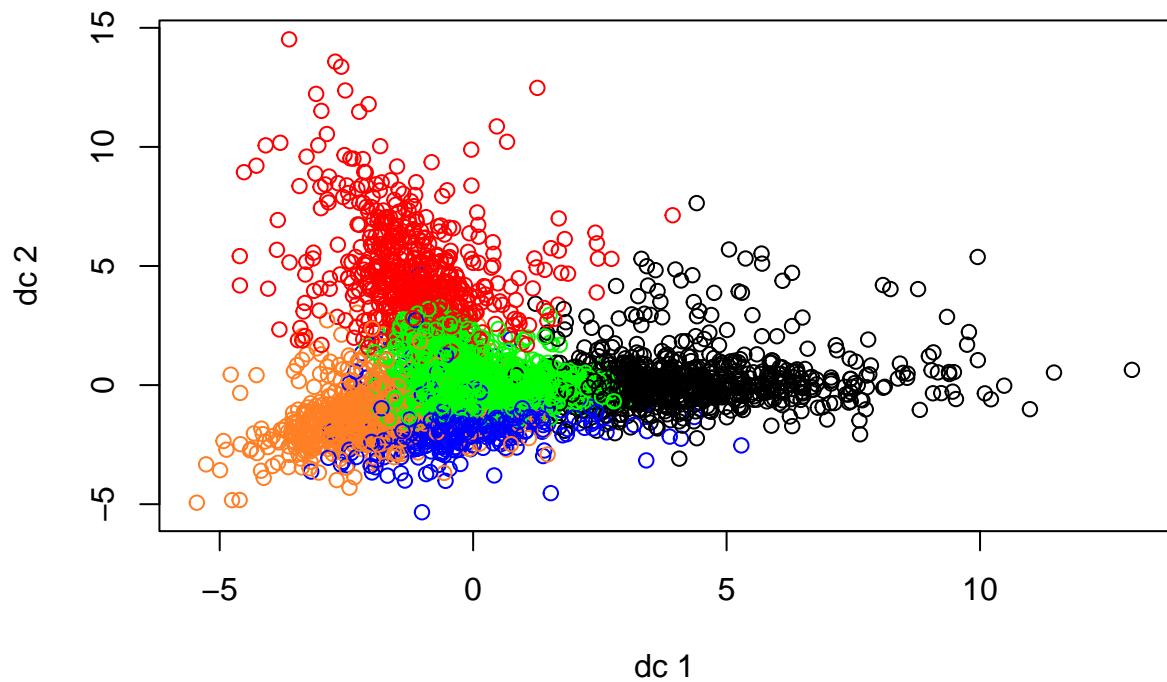


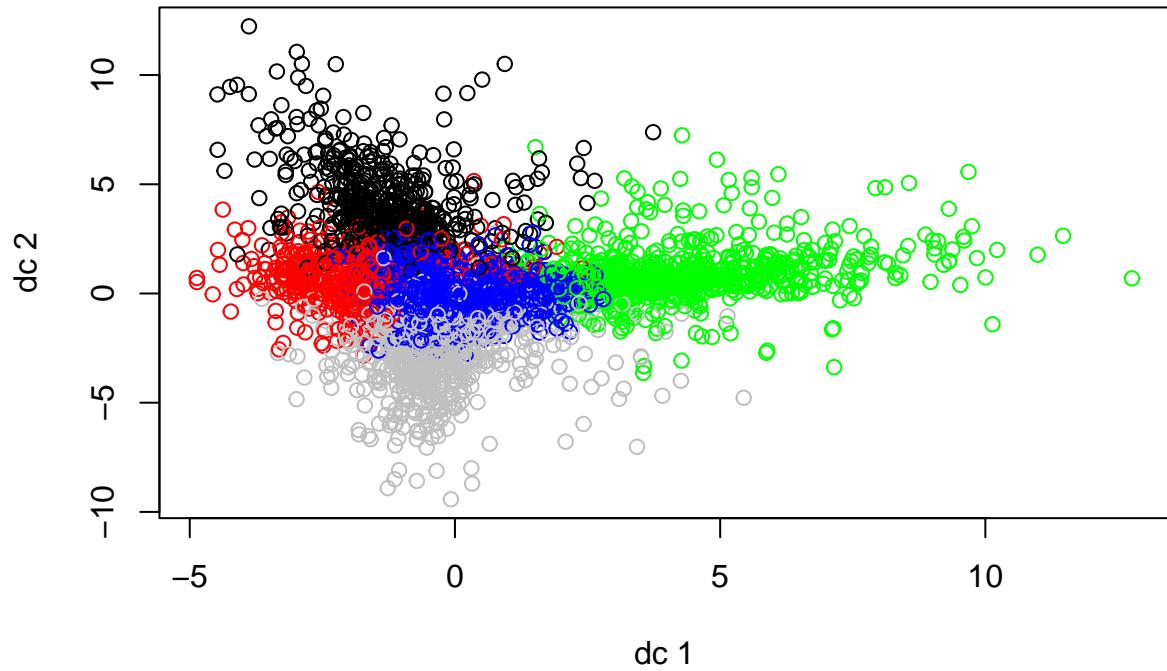
K-Means Clustering

There is no clear edge in the graph. It is difficult to infer the optimal number of clusters as the sum of squares decreases as the number of clusters increases. To find the optimal number of clusters, we will take k in the range [4:6] (where there seems to be an elbow in the graph). Clustering with different k values will allow us to identify clusters of customers with similar tweeting patterns.

```
## Loading required package: tools
```







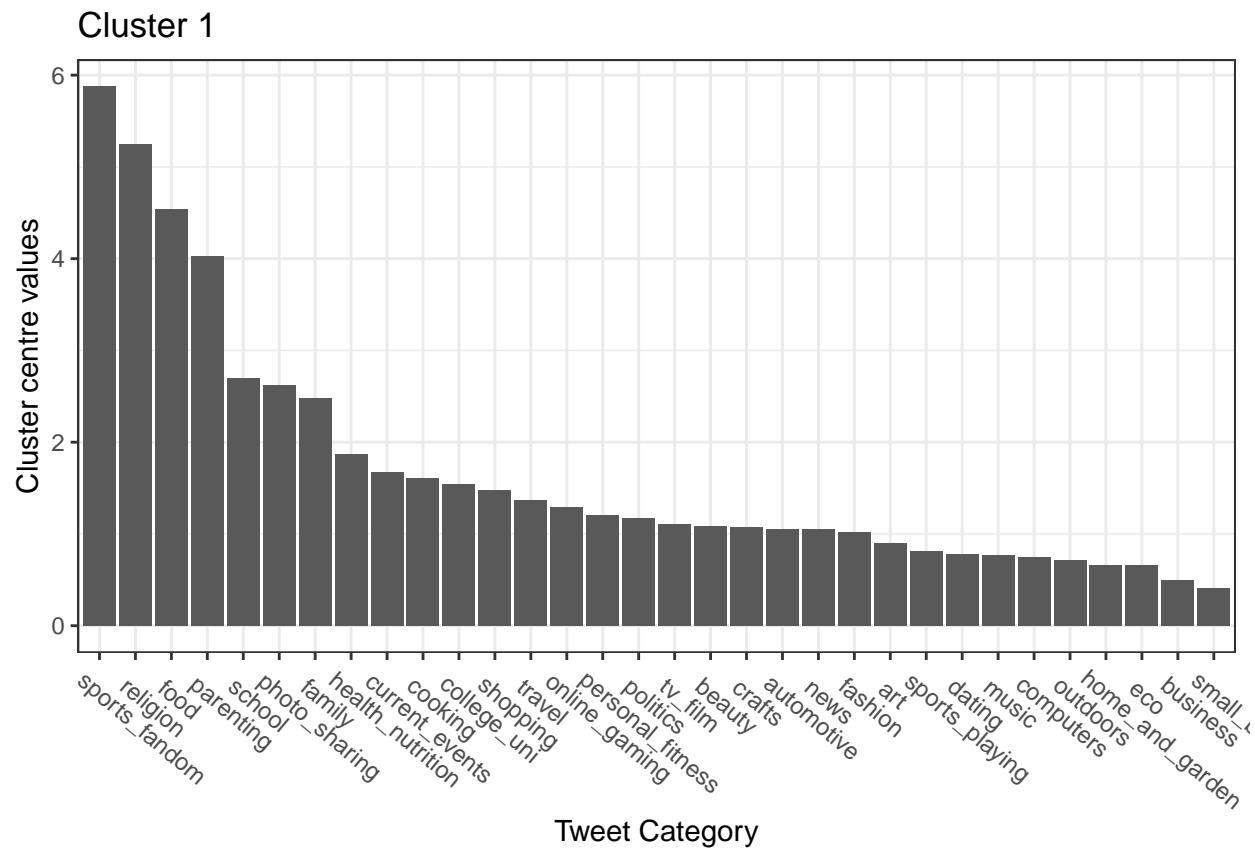
We can clearly see from the above graphs that in 4 clusters, each point is close to a merged center. In 6 clusters, the sum of distances decreases and the graph becomes too noisy. 5 clusters is the easiest to interpret.

Extracting Cluster Centers

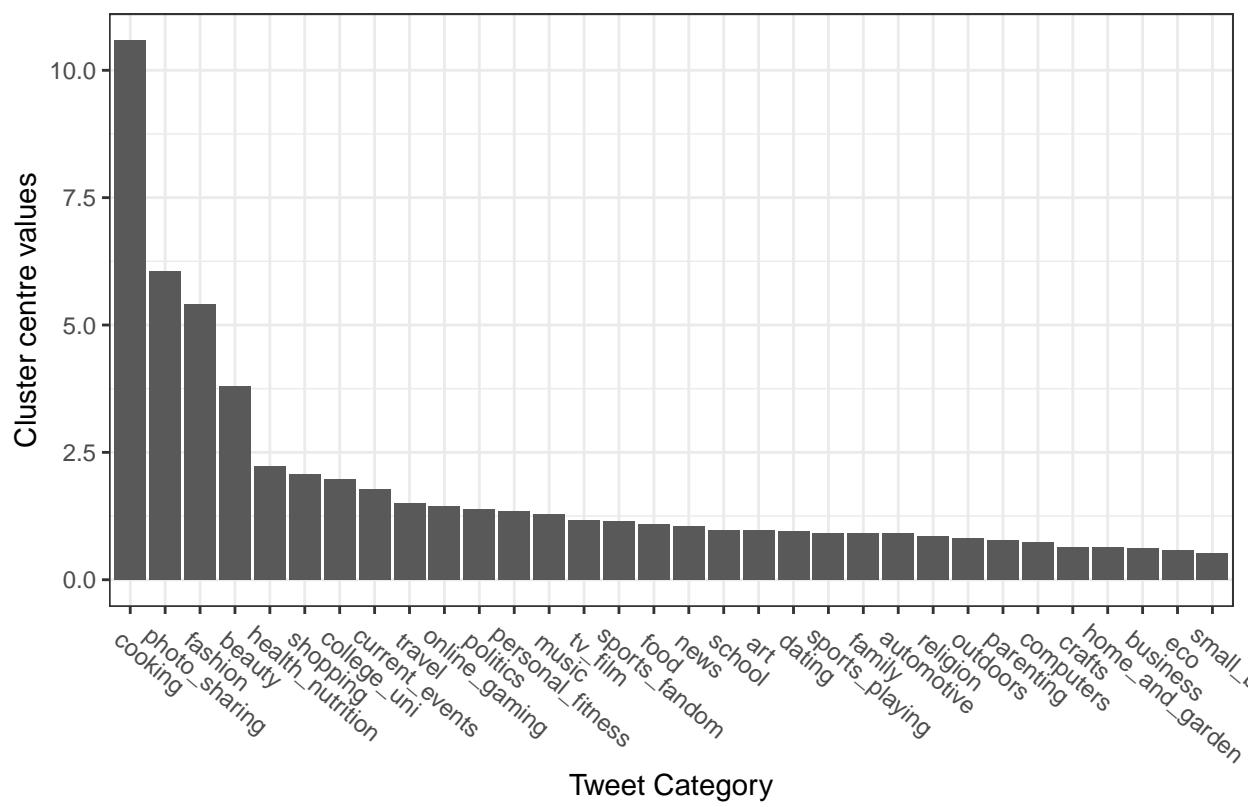
```

##          V1            V2            V3            V4
##  Min.   :0.4104   Min.   :0.5221   Min.   :0.2883   Min.   :0.4677
##  1st Qu.:0.8011   1st Qu.:0.8421   1st Qu.:0.4611   1st Qu.:0.7001
##  Median :1.1410   Median :1.0638   Median :0.5976   Median :1.0372
##  Mean   :1.6874   Mean   :1.7844   Mean   :0.7619   Mean   :1.6633
##  3rd Qu.:1.7246   3rd Qu.:1.5655   3rd Qu.:1.0150   3rd Qu.:1.6661
##  Max.   :5.8742   Max.   :10.5810   Max.   :2.3079   Max.   :8.8441
##          V5
##  Min.   : 0.2958
##  1st Qu.: 0.6835
##  Median : 0.9641
##  Mean   : 1.6156
##  3rd Qu.: 1.3449
##  Max.   :11.8692

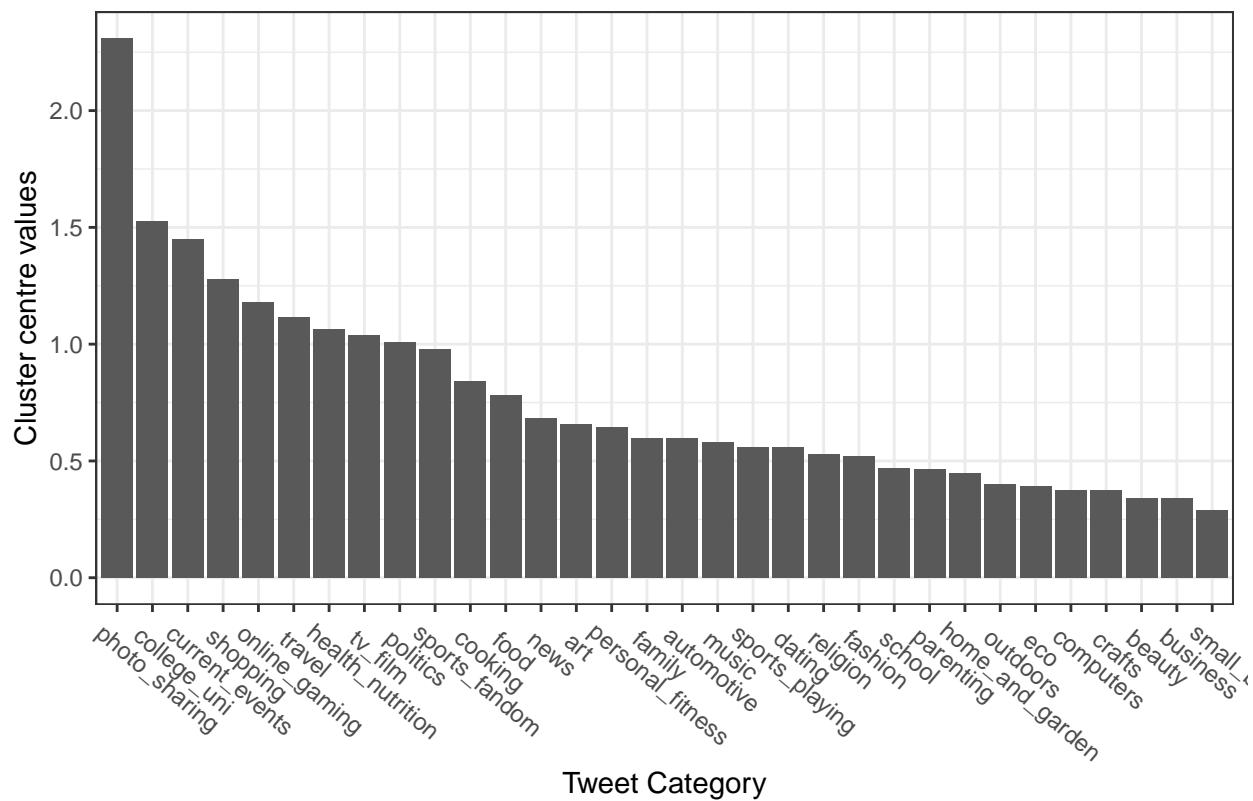
```



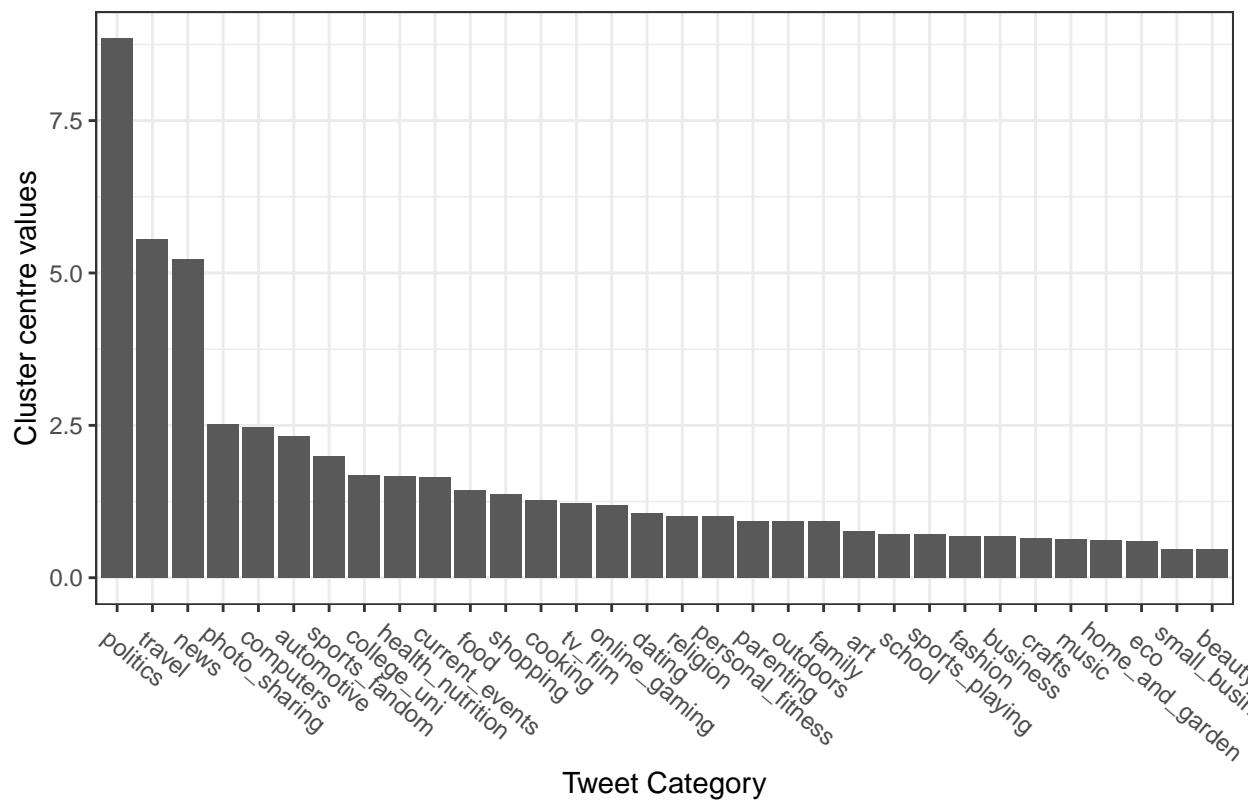
Cluster 2



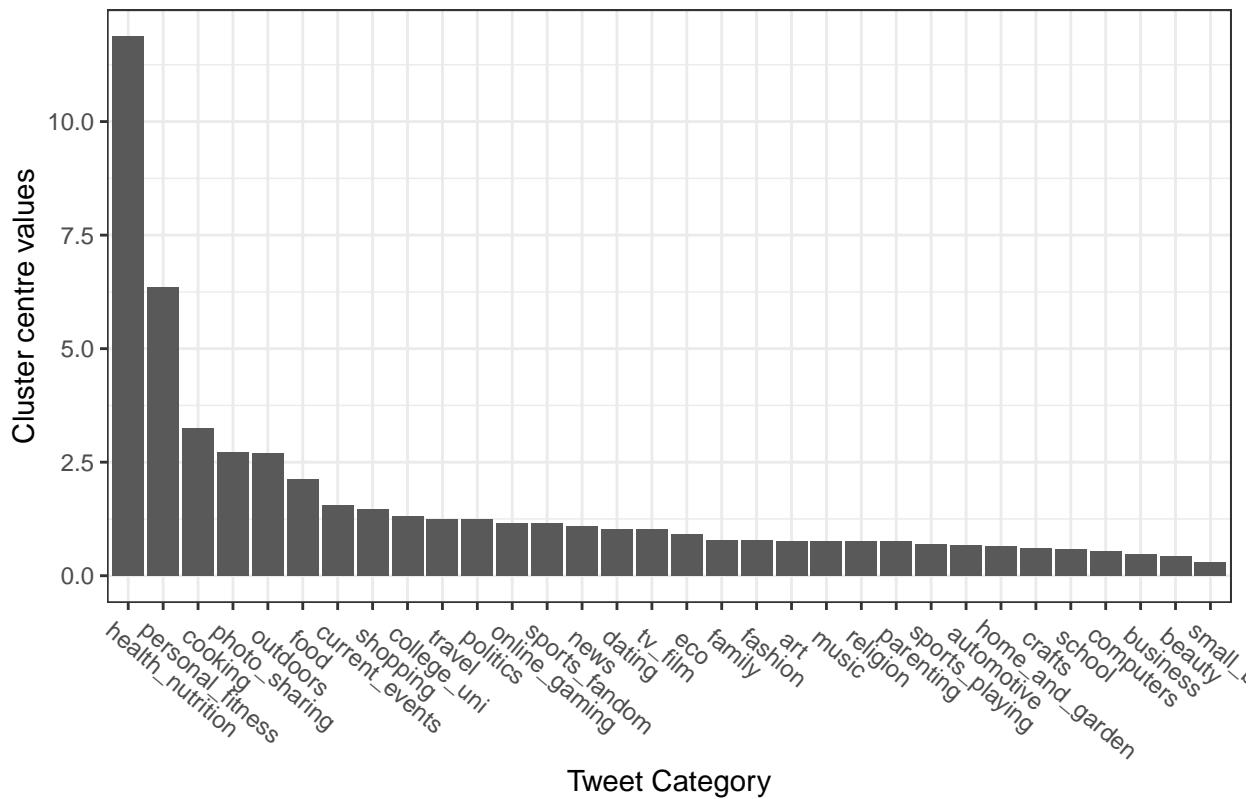
Cluster 3



Cluster 4



Cluster 5



The above plots show us the characteristics of each of the 5 clusters.

Based on the analysis, we can classify 5 segments that NutrientH20 should concentrate on.

Results

Cluster 1: College, Shopping, Current Events Cluster 2: Sports, Religion, Food, and Parenting Cluster 3: Politics, Travel, and News Cluster 4: Fashion, Beauty, and Health Nutrition Cluster 5: Health Nutrition, Personal Fitness, and Cooking

The first cluster represents a younger generation (genZ/millenials). They are mostly well-educated college students. NutrientH20 can appeal to this segment by making their tweets and advertisements more informational and engaging (to hold the attention of the younger population).

The second cluster seems to represent an older generation (mostly genX). Their most striking interests are in Food and Parenting. NutrientH20 can leverage these topics in their tweets by showing the nutrient value of their product, and how it can positively impact the market segment and their children.

The third cluster appears to represent a very well-traveled and socially aware customer. NutrientH20 will have to appeal to this segment by differentiating their product not only from the local, but the global market market that sells similar items.

The fourth cluster again is a representation of the younger generation. This segment is much more active on social media. NutrientH20 will have to carefully select and reach out to social media influencers with an interest in fitness, who will be willing to promote their product. Collaborations with small influencers will allow the company to appeal to this segment and to the influencers' followers as well.

The fifth cluster represents a segment that is very interested in personal fitness. NutrientH20 can again appeal to this segment by promoting the health benefits of their product.

Author Attribution

```
## 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

##
## Attaching package: 'magrittr'

## The following object is masked from 'package:ggmap':
##      inset

## The following object is masked from 'package:purrr':
##      set_names

## The following object is masked from 'package:tidyverse':
##      extract

##
## Attaching package: 'proxy'

## The following object is masked from 'package:Matrix':
##      as.matrix

## The following objects are masked from 'package:stats':
##      as.dist, dist

## The following object is masked from 'package:base':
##      as.matrix

##
## Attaching package: 'caret'
```

```

## The following object is masked from 'package:purrr':
##
##     lift

## The following object is masked from 'package:mosaic':
##
##     dotPlot

## -----
## You have loaded plyr after dplyr - this is likely to cause problems.
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:
## library(plyr); library(dplyr)

## -----
## 
## Attaching package: 'plyr'

## The following object is masked from 'package:ggpubr':
##
##     mutate

## The following object is masked from 'package:purrr':
##
##     compact

## The following object is masked from 'package:mosaic':
##
##     count

## The following objects are masked from 'package:dplyr':
##
##     arrange, count, desc, failwith, id, mutate, rename, summarise,
##     summarise

```

1) Reading Files and Data Pre-Processing for Train Set

1. Created a reader plain function to read each of the files in the folder.
2. Created the training dataset using a for loop.
3. Created a text mining corpus.
4. Used the tm_map function to convert to lower case, remove numbers, remove punctuations, remove excess spaces and remove stopwords.
5. We then removed words that have very low frequency in most documents using the removeSparseTerms function. We remove words from the Document Term Matrix that have 0 frequency 95% of the times. (2500 documents, 785 terms remain)

```

## <<DocumentTermMatrix (documents: 2500, terms: 10584)>>
## Non-/sparse entries: 459753/26000247
## Sparsity           : 98%
## Maximal term length: 61
## Weighting          : term frequency - inverse document frequency (normalized) (tf-idf)

```

```

## <<DocumentTermMatrix (documents: 2500, terms: 785)>>
## Non-/sparse entries: 240686/1721814
## Sparsity           : 88%
## Maximal term length: 18
## Weighting          : term frequency - inverse document frequency (normalized) (tf-idf)

```

2) Reading Files and Data Pre-Processing for Test Set

1. Created a reader plain function to read each of the files in the folder.
2. Created the test dataset using a for loop.
3. Created a text mining corpus.
4. Used the tm_map function to convert to lower case, remove numbers, remove punctuations, remove excess spaces and remove stop words.
5. Ensured same number of columns in training and test set.

```

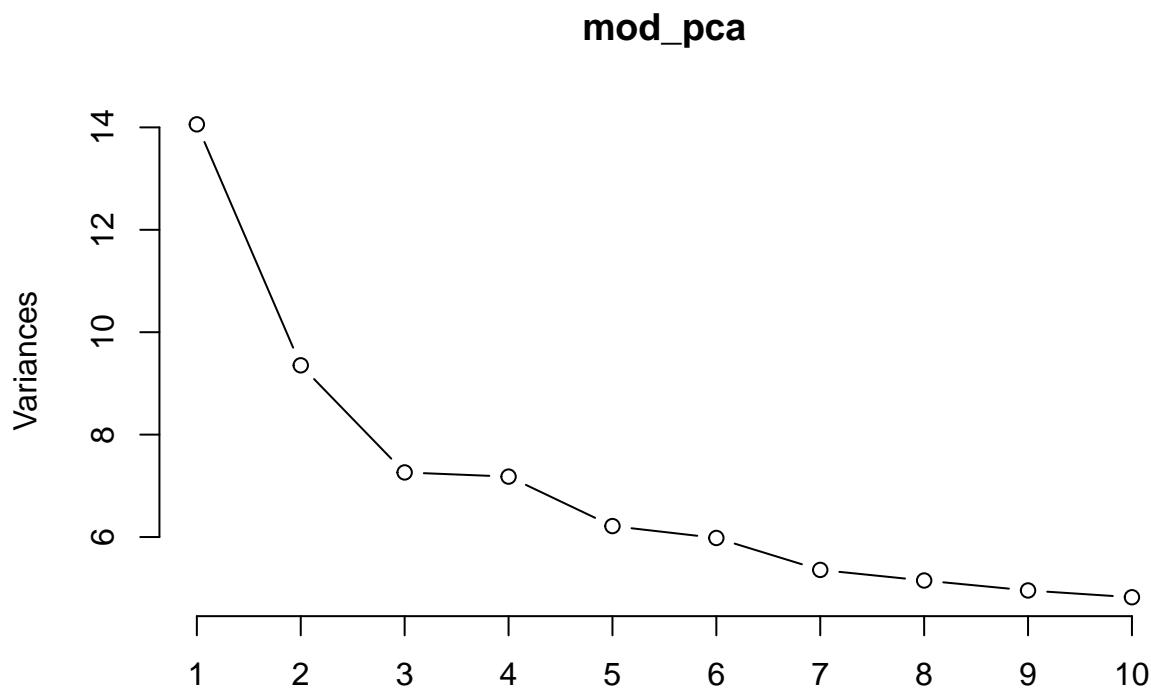
## <<DocumentTermMatrix (documents: 2500, terms: 785)>>
## Non-/sparse entries: 241658/1720842
## Sparsity           : 88%
## Maximal term length: 18
## Weighting          : term frequency - inverse document frequency (normalized) (tf-idf)

```

3) Principal Component Analysis.

Principal component analysis is used to (1) extract relevant features from the huge set of variables (2) eliminate the effect of multi-collinearity while not losing out on relevant information from the correlated variables

What we did- 1. Eliminated 0 entry columns. 2. Used only common columns. 3. Extracted Principal Components. 4. Choosing principal components based on PCA, we see that roughly 400 (half) the variables describe 80% of the variance. Thus, we take 400 of the 785 components to reduce the dimensions of our data.



4) Classification Algorithms to classify Authors of the articles.

Naive Bayes:

We first used the Naive Bayes algorithm to identify the authors. This algorithm is based on Bayes' Theorem and assumes independence of the predictor variables involved. This model performs poorly on our training and testing data, identifying just ___ authors (an accuracy of ___).

```
## [1] "1088 authors were correctly identified by Naive Bayes Algorithm, thus giving an accuracy of 49.51%"
```

K-Nearest Neighbors:

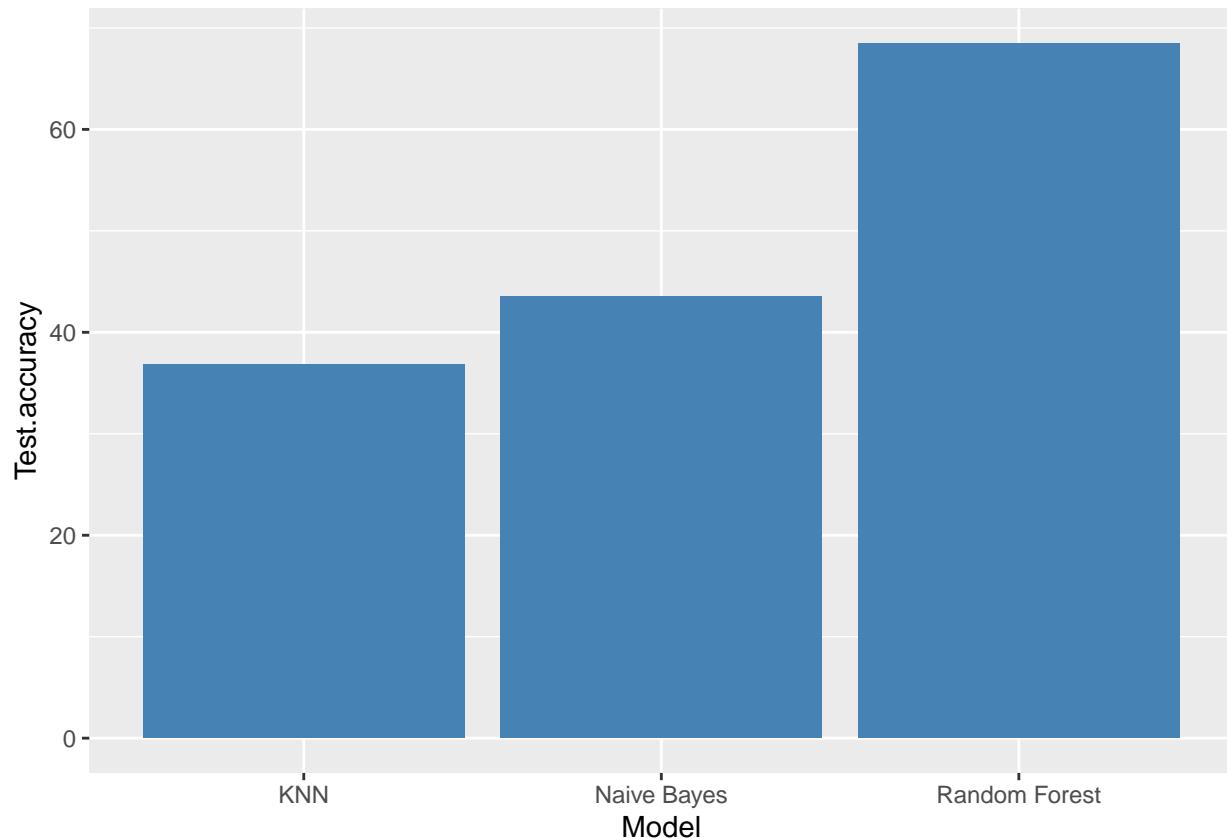
We also used the K-Nearest Neighbors algorithm with k=1 to reduce computation time and expect better results. However with just ___ authors correctly identified, the model gave a sub par accuracy of ___.

```
## [1] "921 authors were correctly identified by KNN Algorithm, thus giving an accuracy of 36.84%"
```

Random Forest: The “simplest complex” classification algorithm. Random Forests deal easily with data of high dimensions and helps in reducing over-fitting as it sequentially builds on the trees. We trained the model with a parameter to randomly sample 6 variables at each split, given by the ‘mtry’ parameter. To find the accuracy, we took the authors as factors and compared them to the predicted values. We see that 1697 authors were correctly identified by the model, which means a decent accuracy of 67.88%.

```
## [1] "1712 authors were correctly identified by Random Forests, thus giving an accuracy of 68.48%"
```

Based on the number of authors correctly identified and the consequent accuracy of each of the models, we see that the Random Forest algorithm with an accuracy of nearly 68% performs the best, followed by the Naive Bayes algorithm and then the KNN algorithm. We can see the same on the following visual.



Associate Rule Mining

Main Idea:

Find associations between items by looking for combinations of products that frequently co-occur in transactions. In other words, it allows the supermarkets to identify relationships between the products that people buy.

Key Definitions:

Support : % of transactions that contain all items in an item set. High value of support is preferred since they are likely to be applicable to a large number of future transactions.

Confidence : the probability that a transaction that contains the items on the left hand side of the rule also contains the item on the right hand side.

Lift : Probability of all items occur together / product of the probabilities of the items on the left and right hand side occurring as if there was no association between them

Algorithm:

Data mining algorithm used - Apriori Algorithm which works in two steps: - Systematically identify itemsets that occur frequently in the data set with a support greater than a pre-specified threshold. - Calculate the

confidence of all possible rules given the frequent itemsets and keep only those with a confidence greater than a pre-specified threshold.

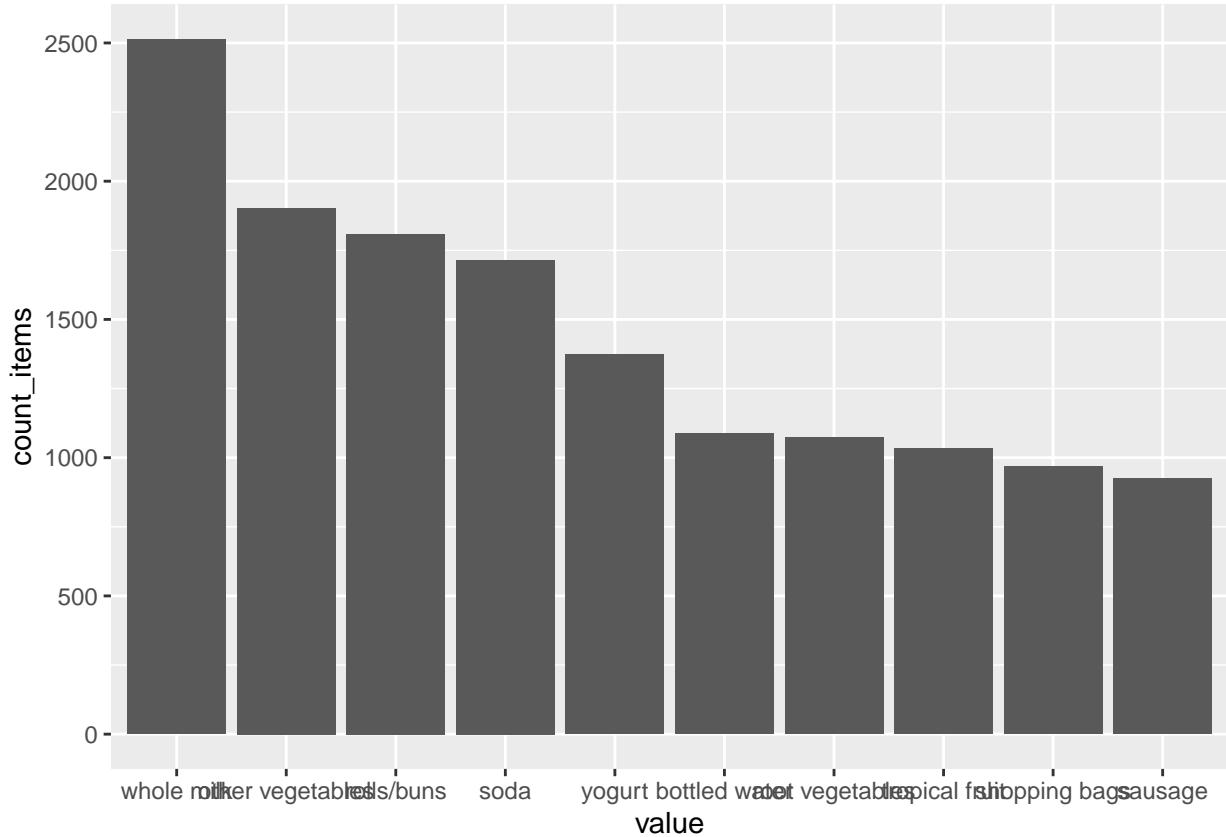
Importing the required Libraries

tidyverse - Data wrangling arules - To use the Apriori algorithm arulesViz - Visualize the Apriori rules
reshape - used to melt the dataframe for summary ggplot - For plotting

```
##  
## 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  
  
##  
## Attaching package: 'reshape2'  
  
## The following object is masked from 'package:tidyr':  
##  
##     smiths
```

Step 1 : Read the data, understand the summary and pre processing

- Read the file using read csv function and header = FALSE parameter
- Rename columns as Item1, Item2, Item3 and Item4
- Melt the data frame to get the summary by plots
- Group by the items and plot the top 10 items after removing blank
- Used ggplot to create the plots



On plotting the top 20 items, we see that whole milk is purchased most frequently. Other items which are frequently purchased in the itemset include Other vegetables, rolls/buns, soda, yogurt.

Step 2: Convert to required format for Apriori algorithm

- Use and convert to the transactions format
- Check for duplicates across columns

Step 3: Build and Inspect the algorithm

- Apriori algorithm 1 - Min support of 0.005, min confidence of 0.1 and max length of 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 [0.00s].
## sorting and recoding items ... [120 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 done [0.00s].
## writing ... [1582 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].
```

	lhs	rhs	support	confidence	coverage
## [1]	{}	=> {bottled water}	0.110523640	0.1105236	1.000000000 1
## [2]	{}	=> {tropical fruit}	0.104931368	0.1049314	1.000000000 1
## [3]	{}	=> {root vegetables}	0.108998475	0.1089985	1.000000000 1
## [4]	{}	=> {soda}	0.174377224	0.1743772	1.000000000 1
## [5]	{}	=> {yogurt}	0.139501779	0.1395018	1.000000000 1
## [6]	{}	=> {rolls/buns}	0.183934926	0.1839349	1.000000000 1
## [7]	{}	=> {other vegetables}	0.193492628	0.1934926	1.000000000 1
## [8]	{}	=> {whole milk}	0.255516014	0.2555160	1.000000000 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 0
## [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 2
## [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]	{chocolate}	=> {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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [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
## [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

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## [693] {bottled water}
## [694] {sausage}
## [695] {tropical fruit}
## [696] {sausage}
## [697] {root vegetables}
## [698] {sausage}
## [699] {soda}
## [700] {sausage}
## [701] {yogurt}
## [702] {sausage}
## [703] {rolls/buns}
## [704] {sausage}
## [705] {other vegetables}
## [706] {sausage}
## [707] {whole milk}
## [708] {bottled water}
## [709] {tropical fruit}
## [710] {bottled water}
## [711] {root vegetables}
## [712] {bottled water}
## [713] {soda}
## [714] {bottled water}
## [715] {yogurt}
## [716] {bottled water}
## [717] {rolls/buns}
## [718] {bottled water}
## [719] {other vegetables}
## [720] {bottled water}
## [721] {whole milk}
## [722] {tropical fruit}
## [723] {root vegetables}
## [724] {tropical fruit}
## [725] {soda}
## [726] {tropical fruit}
## [727] {yogurt}
## [728] {tropical fruit}
## [729] {rolls/buns}
## [730] {tropical fruit}
## [731] {other vegetables}
## [732] {tropical fruit}
## [733] {whole milk}
## [734] {root vegetables}
## [735] {soda}
## [736] {root vegetables}
## [737] {yogurt}
## [738] {root vegetables}
## [739] {rolls/buns}
## [740] {root vegetables}
## [741] {other vegetables}
## [742] {root vegetables}
## [743] {whole milk}
## [744] {soda}
## [745] {yogurt}
## [746] {soda}

=> {sausage} 0.011997966 0.1085557 0.110523640 1
=> {tropical fruit} 0.013929842 0.1482684 0.093950178 1
=> {sausage} 0.013929842 0.1327519 0.104931368 1
=> {root vegetables} 0.014946619 0.1590909 0.093950178 1
=> {sausage} 0.014946619 0.1371269 0.108998475 1
=> {soda} 0.024300966 0.2586580 0.093950178 1
=> {sausage} 0.024300966 0.1393586 0.174377224 1
=> {yogurt} 0.019623793 0.2088745 0.093950178 1
=> {sausage} 0.019623793 0.1406706 0.139501779 1
=> {rolls/buns} 0.030604982 0.3257576 0.093950178 1
=> {sausage} 0.030604982 0.1663903 0.183934926 1
=> {other vegetables} 0.026944586 0.2867965 0.093950178 1
=> {sausage} 0.026944586 0.1392538 0.193492628 1
=> {whole milk} 0.029893238 0.3181818 0.093950178 1
=> {sausage} 0.029893238 0.1169916 0.255516014 1
=> {tropical fruit} 0.018505338 0.1674333 0.110523640 1
=> {bottled water} 0.018505338 0.1763566 0.104931368 1
=> {root vegetables} 0.015658363 0.1416743 0.110523640 1
=> {bottled water} 0.015658363 0.1436567 0.108998475 1
=> {soda} 0.028978139 0.2621895 0.110523640 1
=> {bottled water} 0.028978139 0.1661808 0.174377224 1
=> {yogurt} 0.022979156 0.2079117 0.110523640 1
=> {bottled water} 0.022979156 0.1647230 0.139501779 1
=> {rolls/buns} 0.024199288 0.2189512 0.110523640 1
=> {bottled water} 0.024199288 0.1315644 0.183934926 1
=> {other vegetables} 0.024809354 0.2244710 0.110523640 1
=> {bottled water} 0.024809354 0.1282186 0.193492628 1
=> {whole milk} 0.034367056 0.3109476 0.110523640 1
=> {bottled water} 0.034367056 0.1345006 0.255516014 1
=> {root vegetables} 0.021047280 0.2005814 0.104931368 1
=> {tropical fruit} 0.021047280 0.1930970 0.108998475 1
=> {soda} 0.020843925 0.1986434 0.104931368 1
=> {tropical fruit} 0.020843925 0.1195335 0.174377224 1
=> {yogurt} 0.029283172 0.2790698 0.104931368 2
=> {tropical fruit} 0.029283172 0.2099125 0.139501779 2
=> {rolls/buns} 0.024605999 0.2344961 0.104931368 1
=> {tropical fruit} 0.024605999 0.1337756 0.183934926 1
=> {other vegetables} 0.035892222 0.3420543 0.104931368 1
=> {tropical fruit} 0.035892222 0.1854966 0.193492628 1
=> {whole milk} 0.042297916 0.4031008 0.104931368 1
=> {tropical fruit} 0.042297916 0.1655392 0.255516014 1
=> {soda} 0.018607016 0.1707090 0.108998475 0
=> {root vegetables} 0.018607016 0.1067055 0.174377224 0
=> {yogurt} 0.025826131 0.2369403 0.108998475 1
=> {root vegetables} 0.025826131 0.1851312 0.139501779 1
=> {rolls/buns} 0.024300966 0.2229478 0.108998475 1
=> {root vegetables} 0.024300966 0.1321172 0.183934926 1
=> {other vegetables} 0.047381800 0.4347015 0.108998475 2
=> {root vegetables} 0.047381800 0.2448765 0.193492628 2
=> {rolls/buns} 0.048906965 0.4486940 0.108998475 1
=> {root vegetables} 0.048906965 0.1914047 0.255516014 1
=> {whole milk} 0.027351296 0.1568513 0.174377224 1
=> {yogurt} 0.027351296 0.1960641 0.139501779 1
=> {soda} 0.038332486 0.2198251 0.174377224 1
=> {rolls/buns}

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## [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,	=> {whole milk}	0.005083884	0.5102041	0.009964413	1
	other vegetables}	=> {other vegetables}	0.005083884	0.4504505	0.011286223	2
## [765]	{oil,	=> {other vegetables}	0.005693950	0.6021505	0.009456024	3
	whole milk}	=> {root vegetables}	0.005693950	0.4000000	0.014234875	3
## [766]	{onions,	=> {root vegetables}	0.005693950	0.1201717	0.047381800	3
	root vegetables}	=> {onions}	0.006609049	0.4642857	0.014234875	1
## [767]	{onions,	=> {whole milk}	0.006609049	0.5462185	0.012099644	2
	other vegetables}	=> {other vegetables}	0.006304016	0.4558824	0.013828165	1
## [768]	{other vegetables,	=> {whole milk}	0.006304016	0.4275862	0.014743264	2
	root vegetables}	=> {other vegetables}	0.005185562	0.5425532	0.009557702	2
## [769]	{onions,	=> {whole milk}	0.005185562	0.4047619	0.012811388	2
	other vegetables}	=> {whole milk}	0.006304016	0.5849057	0.010777834	2
## [770]	{onions,	=> {other vegetables}	0.006304016	0.4189189	0.015048297	2
	whole milk}	=> {whole milk}	0.005693950	0.5333333	0.010676157	2
## [771]	{hamburger meat,	=> {other vegetables}	0.005693950	0.4210526	0.013523132	2
	other vegetables}	=> {whole milk}	0.005185562	0.4262295	0.012404677	2
## [772]	{hamburger meat,	=> {other vegetables}	0.005185562	0.3851852	0.013726487	2
	whole milk}	=> {other vegetables}	0.005287239	0.1217799	0.043416370	3
## [773]	{hygiene articles,	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
	other vegetables}	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
## [774]	{hygiene articles,	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
	whole milk}	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
## [775]	{other vegetables,	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
	sugar}	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
## [776]	{sugar,	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
	whole milk}	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
## [777]	{long life bakery product,	=> {whole milk}	0.005287239	0.005287239	0.043416370	3
	other vegetables}	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
## [778]	{long life bakery product,	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
	whole milk}	=> {cream cheese,	0.005287239	0.005287239	0.043416370	3
## [779]	{cream cheese,	=> {yogurt}	0.005287239	0.005287239	0.043416370	3
	yogurt}	=> {other vegetables}	0.005287239	0.005287239	0.043416370	3
## [780]	{cream cheese,	=> {yogurt}	0.005287239	0.005287239	0.043416370	3
	other vegetables}	=> {cream cheese,	0.005287239	0.005287239	0.043416370	3
## [781]	{other vegetables,	=> {cream cheese}	0.005287239	0.005287239	0.043416370	3
	yogurt}	=> {cream cheese}	0.005287239	0.005287239	0.043416370	3
## [782]	{cream cheese,	=> {cream cheese}	0.005287239	0.005287239	0.043416370	3

##	yogurt}	=> {whole milk}	0.006609049	0.5327869	0.012404677	2
## [783]	{cream cheese,	=> {yogurt}	0.006609049	0.4012346	0.016471784	2
##	whole milk}					
## [784]	{whole milk,	=> {cream cheese}	0.006609049	0.1179673	0.056024403	2
##	yogurt}					
## [785]	{cream cheese,	=> {whole milk}	0.006710727	0.4888889	0.013726487	1
##	other vegetables}					
## [786]	{cream cheese,	=> {other vegetables}	0.006710727	0.4074074	0.016471784	2
##	whole milk}					
## [787]	{chicken,	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
##	root vegetables}					
## [788]	{chicken,	=> {root vegetables}	0.005693950	0.3181818	0.017895272	2
##	other vegetables}					
## [789]	{other vegetables,	=> {chicken}	0.005693950	0.1201717	0.047381800	2
##	root vegetables}					
## [790]	{chicken,	=> {whole milk}	0.005998983	0.5514019	0.010879512	2
##	root vegetables}					
## [791]	{chicken,	=> {root vegetables}	0.005998983	0.3410405	0.017590239	3
##	whole milk}					
## [792]	{root vegetables,	=> {chicken}	0.005998983	0.1226611	0.048906965	2
##	whole milk}					
## [793]	{chicken,	=> {whole milk}	0.005287239	0.5473684	0.009659380	2
##	rolls/buns}					
## [794]	{chicken,	=> {rolls/buns}	0.005287239	0.3005780	0.017590239	1
##	whole milk}					
## [795]	{chicken,	=> {whole milk}	0.008439248	0.4715909	0.017895272	1
##	other vegetables}					
## [796]	{chicken,	=> {other vegetables}	0.008439248	0.4797688	0.017590239	2
##	whole milk}					
## [797]	{other vegetables,	=> {chicken}	0.008439248	0.1127717	0.074834774	2
##	whole milk}					
## [798]	{other vegetables,	=> {whole milk}	0.005897306	0.4296296	0.013726487	1
##	white bread}					
## [799]	{white bread,	=> {other vegetables}	0.005897306	0.3452381	0.017081851	1
##	whole milk}					
## [800]	{chocolate,	=> {whole milk}	0.005083884	0.3759398	0.013523132	1
##	soda}					
## [801]	{chocolate,	=> {soda}	0.005083884	0.3048780	0.016675140	1
##	whole milk}					
## [802]	{soda,	=> {chocolate}	0.005083884	0.1269036	0.040061007	2
##	whole milk}					
## [803]	{chocolate,	=> {whole milk}	0.005490595	0.4320000	0.012709710	1
##	other vegetables}					
## [804]	{chocolate,	=> {other vegetables}	0.005490595	0.3292683	0.016675140	1
##	whole milk}					
## [805]	{coffee,	=> {whole milk}	0.005083884	0.5208333	0.009761057	2
##	yogurt}					
## [806]	{coffee,	=> {yogurt}	0.005083884	0.2717391	0.018708693	1
##	whole milk}					
## [807]	{coffee,	=> {whole milk}	0.006405694	0.4772727	0.013421454	1
##	other vegetables}					
## [808]	{coffee,	=> {whole milk}	0.006405694	0.3423913	0.018708693	1
##	whole milk}					
## [809]	{frozen vegetables,	=> {other vegetables}	0.006405694	0.3423913	0.018708693	1

```

##      root vegetables}          => {other vegetables}          0.006100661  0.5263158 0.011591256 2
## [810] {frozen vegetables,     => {root vegetables}           0.006100661  0.3428571 0.017793594 3
##          other vegetables}    => {frozen vegetables}          0.006100661  0.1287554 0.047381800 2
## [811] {other vegetables,     => {whole milk}                 0.006202339  0.5350877 0.011591256 2
##          root vegetables}    => {root vegetables}           0.006202339  0.3034826 0.020437214 2
## [812] {frozen vegetables,     => {frozen vegetables}          0.006202339  0.1268191 0.048906965 2
##          root vegetables}    => {other vegetables}          0.005287239  0.4262295 0.012404677 2
## [813] {frozen vegetables,     => {yogurt}                   0.005287239  0.2971429 0.017793594 2
##          whole milk}          => {frozen vegetables}          0.005287239  0.1217799 0.043416370 2
## [814] {root vegetables,       => {other vegetables}          0.006100661  0.4918033 0.012404677 1
##          whole milk}          => {yogurt}                   0.006100661  0.2985075 0.020437214 2
## [815] {frozen vegetables,     => {frozen vegetables}          0.006100661  0.1088929 0.056024403 2
##          yogurt}              => {whole milk}               0.005083884  0.5000000 0.010167768 1
## [816] {frozen vegetables,     => {rolls/buns}               0.005083884  0.2487562 0.020437214 1
##          other vegetables}    => {whole milk}               0.009659380  0.5428571 0.017793594 2
## [817] {other vegetables,     => {other vegetables}          0.009659380  0.4726368 0.020437214 2
##          yogurt}              => {frozen vegetables}          0.009659380  0.1290761 0.074834774 2
## [818] {frozen vegetables,     => {other vegetables}          0.007930859  0.4561404 0.017386884 2
##          yogurt}              => {root vegetables}          0.007930859  0.4020619 0.019725470 3
## [819] {frozen vegetables,     => {root vegetables}          0.007930859  0.1673820 0.047381800 3
##          whole milk}          => {beef}                     0.008032537  0.4619883 0.017386884 1
## [820] {whole milk,           => {whole milk}                0.008032537  0.3779904 0.021250635 3
##          yogurt}              => {root vegetables}          0.008032537  0.1642412 0.048906965 3
## [821] {frozen vegetables,     => {beef}                     0.005185562  0.4434783 0.011692933 2
##          rolls/buns}           => {other vegetables}          0.005185562  0.2628866 0.019725470 1
## [822] {frozen vegetables,     => {yogurt}                   0.005185562  0.1194379 0.043416370 2
##          whole milk}          => {beef}                     0.006100661  0.5217391 0.011692933 2
## [823] {frozen vegetables,     => {whole milk}               0.006100661  0.5263158 0.011591256 2
##          other vegetables}    => {rolls/buns}               0.005083884  0.2487562 0.020437214 1
## [824] {frozen vegetables,     => {whole milk}               0.009659380  0.5428571 0.017793594 2
##          whole milk}          => {other vegetables}          0.009659380  0.4726368 0.020437214 2
## [825] {other vegetables,     => {frozen vegetables}          0.009659380  0.1290761 0.074834774 2
##          whole milk}          => {other vegetables}          0.007930859  0.4561404 0.017386884 2
## [826] {beef,                  => {other vegetables}          0.007930859  0.4020619 0.019725470 3
##          root vegetables}    => {root vegetables}          0.007930859  0.1673820 0.047381800 3
## [827] {beef,                  => {root vegetables}          0.007930859  0.4619883 0.017386884 1
##          other vegetables}    => {beef}                     0.008032537  0.3779904 0.021250635 3
## [828] {other vegetables,     => {beef}                     0.008032537  0.1642412 0.048906965 3
##          root vegetables}    => {whole milk}               0.005185562  0.4434783 0.011692933 2
## [829] {beef,                  => {root vegetables}          0.005185562  0.2628866 0.019725470 1
##          root vegetables}    => {other vegetables}          0.005185562  0.1194379 0.043416370 2
## [830] {beef,                  => {yogurt}                   0.006100661  0.5217391 0.011692933 2
##          whole milk}          => {beef}                     0.006100661  0.5263158 0.011591256 2
## [831] {root vegetables,       => {beef}                     0.006100661  0.5263158 0.011591256 2
##          whole milk}          => {yogurt}                   0.005185562  0.2628866 0.019725470 1
## [832] {beef,                  => {other vegetables}          0.005185562  0.1194379 0.043416370 2
##          yogurt}              => {beef}                     0.006100661  0.5217391 0.011692933 2
## [833] {beef,                  => {yogurt}                   0.005185562  0.2628866 0.019725470 1
##          other vegetables}    => {beef}                     0.005185562  0.1194379 0.043416370 2
## [834] {other vegetables,     => {beef}                     0.005185562  0.5217391 0.011692933 2
##          yogurt}              => {yogurt}                   0.005185562  0.2628866 0.019725470 1
## [835] {beef,                  => {beef}                     0.005185562  0.1194379 0.043416370 2
##          yogurt}              => {whole milk}               0.006100661  0.5217391 0.011692933 2
## [836] {beef,                  => {whole milk}               0.006100661  0.5263158 0.011591256 2

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## [837]	{whole milk, yogurt}	=> {yogurt}	0.006100661	0.2870813	0.021250635	2
## [838]	{beef, rolls/buns}	=> {other vegetables}	0.005795628	0.4253731	0.013624809	2
## [839]	{beef, other vegetables}	=> {rolls/buns}	0.005795628	0.2938144	0.019725470	1
## [840]	{other vegetables, rolls/buns}	=> {beef}	0.005795628	0.1360382	0.042602949	2
## [841]	{beef, rolls/buns}	=> {whole milk}	0.006812405	0.5000000	0.013624809	1
## [842]	{beef, whole milk}	=> {rolls/buns}	0.006812405	0.3205742	0.021250635	1
## [843]	{rolls/buns, whole milk}	=> {beef}	0.006812405	0.1202873	0.056634469	2
## [844]	{beef, other vegetables}	=> {whole milk}	0.009252669	0.4690722	0.019725470	1
## [845]	{beef, whole milk}	=> {other vegetables}	0.009252669	0.4354067	0.021250635	2
## [846]	{other vegetables, whole milk}	=> {beef}	0.009252669	0.1236413	0.074834774	2
## [847]	{curd, whipped/sour cream}	=> {whole milk}	0.005897306	0.5631068	0.010472801	2
## [848]	{curd, whole milk}	=> {whipped/sour cream}	0.005897306	0.2256809	0.026131164	3
## [849]	{whipped/sour cream, whole milk}	=> {curd}	0.005897306	0.1829653	0.032231825	3
## [850]	{curd, tropical fruit}	=> {yogurt}	0.005287239	0.5148515	0.010269446	3
## [851]	{curd, yogurt}	=> {tropical fruit}	0.005287239	0.3058824	0.017285206	2
## [852]	{tropical fruit, yogurt}	=> {curd}	0.005287239	0.1805556	0.029283172	3
## [853]	{curd, tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446	2
## [854]	{curd, other vegetables}	=> {tropical fruit}	0.005287239	0.3076923	0.017183528	2
## [855]	{other vegetables, tropical fruit}	=> {curd}	0.005287239	0.1473088	0.035892222	2
## [856]	{curd, tropical fruit}	=> {whole milk}	0.006507372	0.6336634	0.010269446	2
## [857]	{curd, whole milk}	=> {tropical fruit}	0.006507372	0.2490272	0.026131164	2
## [858]	{tropical fruit, whole milk}	=> {curd}	0.006507372	0.1538462	0.042297916	2
## [859]	{curd, root vegetables}	=> {other vegetables}	0.005490595	0.5046729	0.010879512	2
## [860]	{curd, other vegetables}	=> {root vegetables}	0.005490595	0.3195266	0.017183528	2
## [861]	{other vegetables, root vegetables}	=> {curd}	0.005490595	0.1158798	0.047381800	2
## [862]	{curd, root vegetables}	=> {whole milk}	0.006202339	0.5700935	0.010879512	2
## [863]	{curd,					

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##      whole milk}          => {root vegetables}    0.006202339  0.2373541  0.026131164 2
## [864] {root vegetables,   => {curd}           0.006202339  0.1268191  0.048906965 2
##      whole milk}          => {other vegetables} 0.006100661  0.3529412  0.017285206 1
## [865] {curd,              => {yogurt}          0.006100661  0.3550296  0.017183528 2
##      yogurt}             => {curd}           0.006100661  0.1405152  0.043416370 2
## [866] {curd,              => {whole milk}       0.010066090  0.5823529  0.017285206 2
##      other vegetables}   => {yogurt}          0.010066090  0.3852140  0.026131164 2
## [867] {other vegetables, => {curd}           0.010066090  0.1796733  0.056024403 3
##      yogurt}             => {whole milk}       0.005897306  0.5858586  0.010066090 2
## [868] {curd,              => {rolls/buns}      0.005897306  0.2256809  0.026131164 1
##      yogurt}             => {curd}           0.005897306  0.1041293  0.056634469 1
## [869] {curd,              => {whole milk}       0.009862735  0.5739645  0.017183528 2
##      whole milk}          => {other vegetables} 0.009862735  0.3774319  0.026131164 1
## [870] {whole milk,         => {curd}           0.009862735  0.1317935  0.074834774 2
##      yogurt}             => {whole milk}       0.006100661  0.4958678  0.012302999 1
## [871] {curd,              => {rolls/buns}      0.006100661  0.3092784  0.019725470 2
##      rolls/buns}          => {curd}           0.006100661  0.1088929  0.056024403 2
## [872] {curd,              => {whole milk}       0.005287239  0.4521739  0.011692933 1
##      whole milk}          => {napkins}          0.005287239  0.2680412  0.019725470 1
## [873] {rolls/buns,         => {whole milk}       0.006812405  0.4718310  0.014438231 1
##      whole milk}          => {other vegetables} 0.006812405  0.3453608  0.019725470 1
## [874] {curd,              => {napkins}          0.006812405  0.5149254  0.013624809 2
##      other vegetables}   => {other vegetables} 0.007015760  0.3239437  0.021657346 2
## [875] {curd,              => {root vegetables} 0.007015760  0.1480687  0.047381800 2
##      whole milk}          => {root vegetables} 0.006812405  0.5000000  0.013624809 1
## [876] {other vegetables,  => {pork}            0.006812405  0.3073394  0.022165735 2
##      whole milk}          => {root vegetables} 0.006812405  0.1392931  0.048906965 2
## [877] {other vegetables,  => {pork}            0.006812405  0.2373541  0.026131164 2
##      whole milk}          => {curd}           0.006812405  0.1268191  0.048906965 2
## [878] {curd,              => {whole milk}       0.006812405  0.5823529  0.017285206 2
##      yogurt}             => {curd}           0.006812405  0.1041293  0.056634469 1
## [879] {curd,              => {whole milk}       0.006812405  0.4958678  0.012302999 1
##      whole milk}          => {yogurt}          0.006812405  0.3092784  0.019725470 2
## [880] {curd,              => {rolls/buns}      0.006812405  0.2680412  0.019725470 1
##      rolls/buns}          => {curd}           0.006812405  0.1088929  0.056024403 2
## [881] {curd,              => {whole milk}       0.006812405  0.4521739  0.011692933 1
##      whole milk}          => {napkins}          0.006812405  0.2373541  0.026131164 2
## [882] {curd,              => {rolls/buns}      0.006812405  0.1268191  0.048906965 2
##      other vegetables}   => {whole milk}       0.006812405  0.5823529  0.017285206 1
## [883] {curd,              => {curd}           0.006812405  0.1041293  0.056634469 1
##      whole milk}          => {other vegetables} 0.006812405  0.4958678  0.012302999 1
## [884] {pork,               => {curd}           0.006812405  0.3092784  0.019725470 2
##      root vegetables}   => {other vegetables} 0.006812405  0.2680412  0.019725470 1
## [885] {other vegetables,  => {pork}            0.006812405  0.1088929  0.056024403 2
##      pork}                => {root vegetables} 0.006812405  0.4521739  0.011692933 1
## [886] {other vegetables,  => {pork}            0.006812405  0.3092784  0.019725470 2
##      root vegetables}   => {whole milk}       0.006812405  0.2680412  0.019725470 1
## [887] {pork,               => {pork}            0.006812405  0.1088929  0.056024403 2
##      root vegetables}   => {curd}           0.006812405  0.4958678  0.012302999 1
## [888] {pork,               => {whole milk}       0.006812405  0.3092784  0.019725470 2
##      whole milk}          => {root vegetables} 0.006812405  0.2680412  0.019725470 1
## [889] {root vegetables,   => {pork}            0.006812405  0.1088929  0.056024403 2
##      whole milk}          => {curd}           0.006812405  0.4521739  0.011692933 1
## [890] {pork,               => {pork}            0.006812405  0.1088929  0.056024403 2
##      whole milk}          => {curd}           0.006812405  0.4958678  0.012302999 1

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##      rolls/buns}          => {other vegetables}    0.005592272  0.4954955  0.011286223  2
## [891] {other vegetables, => {rolls/buns}        0.005592272  0.2582160  0.021657346  1
##      pork}                => {pork}            0.005592272  0.1312649  0.042602949  2
## [892] {other vegetables, => {whole milk}       0.006202339  0.5495495  0.011286223  2
##      rolls/buns}          => {rolls/buns}       0.006202339  0.2798165  0.022165735  1
## [893] {pork,              => {pork}           0.006202339  0.1095153  0.056634469  1
##      rolls/buns}          => {whole milk}       0.010167768  0.4694836  0.021657346  1
## [894] {pork,              => {rolls/buns}       0.010167768  0.4587156  0.022165735  2
##      whole milk}          => {pork}           0.010167768  0.1358696  0.074834774  2
## [895] {rolls/buns,         => {other vegetables} 0.005185562  0.5483871  0.009456024  2
##      whole milk}          => {pork}           0.005185562  0.2524752  0.020538892  2
## [896] {other vegetables, => {whole milk}       0.005185562  0.1225962  0.042297916  2
##      pork}                => {tropical fruit}  0.005083884  0.5000000  0.010167768  1
## [897] {pork,              => {root vegetables} 0.005083884  0.2475248  0.020538892  2
##      whole milk}          => {frankfurter}     0.005083884  0.1039501  0.048906965  1
## [898] {other vegetables, => {whole milk}       0.006202339  0.5545455  0.011184545  2
##      whole milk}          => {tropical fruit}  0.006202339  0.3019802  0.020538892  2
## [899] {frankfurter,        => {frankfurter}     0.006202339  0.1107078  0.056024403  1
##      tropical fruit}      => {root vegetables} 0.005592272  0.2910053  0.019217082  1
## [900] {frankfurter,        => {whole milk}       0.005592272  0.3395062  0.016471784  1
##      whole milk}          => {frankfurter}     0.005592272  0.1312649  0.042602949  2
## [901] {tropical fruit,    => {frankfurter}     0.005592272  0.005998983  0.3121693  0.019217082  1
##      whole milk}          => {whole milk}       0.005998983  0.2920792  0.020538892  1
## [902] {frankfurter,        => {rolls/buns}       0.005998983  0.1059246  0.056634469  1
##      root vegetables}     => {other vegetables} 0.007625826  0.4629630  0.016471784  1
## [903] {frankfurter,        => {rolls/buns}       0.007625826  0.3712871  0.020538892  1
##      whole milk}          => {frankfurter}     0.007625826  0.1019022  0.074834774  1
## [904] {root vegetables,   => {frankfurter}     0.007625826  0.005592272  0.2910053  0.019217082  1
##      whole milk}          => {whole milk}       0.005083884  0.1039501  0.048906965  1
## [905] {frankfurter,        => {yogurt}          0.006202339  0.005998983  0.3121693  0.019217082  1
##      yogurt}              => {whole milk}       0.006202339  0.3019802  0.020538892  2
## [906] {frankfurter,        => {yogurt}          0.006202339  0.005998983  0.3121693  0.019217082  1
##      whole milk}          => {frankfurter}     0.006202339  0.1107078  0.056024403  1
## [907] {whole milk,         => {frankfurter}     0.006202339  0.005998983  0.3121693  0.019217082  1
##      yogurt}              => {frankfurter}     0.006202339  0.1039501  0.048906965  1
## [908] {frankfurter,        => {rolls/buns}       0.005592272  0.005998983  0.3121693  0.019217082  1
##      rolls/buns}          => {other vegetables} 0.005592272  0.2910053  0.019217082  1
## [909] {frankfurter,        => {rolls/buns}       0.005592272  0.005998983  0.3121693  0.019217082  1
##      other vegetables}    => {frankfurter}     0.005592272  0.1312649  0.042602949  2
## [910] {other vegetables,  => {frankfurter}     0.005592272  0.005998983  0.3121693  0.019217082  1
##      rolls/buns}          => {whole milk}       0.005998983  0.2920792  0.020538892  1
## [911] {frankfurter,        => {rolls/buns}       0.005998983  0.1059246  0.056634469  1
##      rolls/buns}          => {frankfurter}     0.005998983  0.3019802  0.020538892  2
## [912] {frankfurter,        => {whole milk}       0.005998983  0.005998983  0.3121693  0.019217082  1
##      rolls/buns}          => {rolls/buns}       0.005998983  0.2920792  0.020538892  1
## [913] {frankfurter,        => {whole milk}       0.005998983  0.1059246  0.056634469  1
##      whole milk}          => {frankfurter}     0.005998983  0.3019802  0.020538892  2
## [914] {frankfurter,        => {whole milk}       0.005998983  0.005998983  0.3121693  0.019217082  1
##      other vegetables}    => {whole milk}       0.005998983  0.1059246  0.056634469  1
## [915] {frankfurter,        => {other vegetables} 0.005998983  0.005998983  0.3121693  0.019217082  1
##      whole milk}          => {frankfurter}     0.005998983  0.2920792  0.020538892  1
## [916] {other vegetables,  => {frankfurter}     0.005998983  0.1059246  0.056634469  1
##      whole milk}          => {whole milk}       0.005998983  0.3019802  0.020538892  2
## [917] {bottled beer,       => {frankfurter}     0.005998983  0.1059246  0.056634469  1

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##	bottled water}	=> {soda}	0.005083884	0.3225806	0.015760041	1		
## [918]	{bottled beer,	=> {bottled water}	0.005083884	0.2994012	0.016980173	2		
##	soda}	=> {bottled beer}	0.005083884	0.1754386	0.028978139	2		
## [919]	{bottled water,	=> {whole milk}	0.006100661	0.3870968	0.015760041	1		
##	soda}	=> {bottled water}	0.006100661	0.2985075	0.020437214	2		
## [920]	{bottled beer,	=> {bottled beer}	0.006100661	0.1775148	0.034367056	2		
##	bottled water}	=> {whole milk}	0.005185562	0.5604396	0.009252669	2		
## [921]	{bottled beer,	=> {bottled beer}	0.005185562	0.2537313	0.020437214	1		
##	whole milk}	=> {whole milk}	0.005185562	0.3955224	0.013624809	1		
## [922]	{bottled water,	=> {rolls/buns}	0.005388917	0.2636816	0.020437214	1		
##	whole milk}	=> {whole milk}	0.005388917	0.4716981	0.016166751	1		
## [923]	{bottled beer,	=> {rolls/buns}	0.007625826	0.3731343	0.020437214	1		
##	yogurt}	=> {whole milk}	0.007625826	0.1019022	0.074834774	1		
## [924]	{bottled beer,	=> {whole milk}	0.005693950	0.5333333	0.010676157	2		
##	whole milk}	=> {bottled beer}	0.005693950	0.2258065	0.025216065	2		
## [925]	{bottled beer,	=> {whole milk}	0.005693950	0.1346154	0.042297916	2		
##	rolls/buns}	=> {tropical fruit}	0.005693950	0.005693950	0.1164241	0.048906965	1	
## [926]	{bottled beer,	=> {brown bread}	0.005693950	0.005693950	0.4032258	0.012608033	1	
##	whole milk}	=> {whole milk}	0.005693950	0.005693950	0.2016129	0.025216065	1	
## [927]	{bottled beer,	=> {root vegetables}	0.005693950	0.005693950	0.005185562	0.1269036	0.040061007	1
##	other vegetables}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.2771739	0.043416370	1
## [928]	{bottled beer,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.018708693	1
##	whole milk}	=> {root vegetables}	0.005693950	0.005693950	0.005185562	0.007117438	0.014539908	1
## [929]	{other vegetables,	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.014539908	1
##	whole milk}	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [930]	{brown bread,	=> {tropical fruit}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	tropical fruit}	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [931]	{brown bread,	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [932]	{tropical fruit,	=> {root vegetables}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [933]	{brown bread,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	root vegetables}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [934]	{brown bread,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {root vegetables}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [935]	{root vegetables,	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [936]	{brown bread,	=> {root vegetables}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	soda}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [937]	{brown bread,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {soda}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [938]	{soda,	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [939]	{brown bread,	=> {other vegetables}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	yogurt}	=> {tropical fruit}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [940]	{brown bread,	=> {yogurt}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	other vegetables}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [941]	{other vegetables,	=> {yogurt}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	yogurt}	=> {brown bread}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [942]	{brown bread,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	yogurt}	=> {yogurt}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [943]	{brown bread,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
##	whole milk}	=> {yogurt}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2
## [944]	{whole milk,	=> {whole milk}	0.005693950	0.005693950	0.005185562	0.007117438	0.025216065	2

##	yogurt}	=> {brown bread}	0.007117438	0.1270417	0.056024403	1
## [945]	{brown bread,	=> {whole milk}	0.005287239	0.4193548	0.012608033	1
## [946]	rolls/buns}	=> {rolls/buns}	0.005287239	0.2096774	0.025216065	1
## [947]	{brown bread,	=> {whole milk}	0.009354347	0.5000000	0.018708693	1
## [948]	other vegetables}	=> {other vegetables}	0.009354347	0.3709677	0.025216065	1
## [949]	{brown bread,	=> {brown bread}	0.009354347	0.1250000	0.074834774	1
## [950]	whole milk}	=> {whole milk}	0.005185562	0.6219512	0.008337570	2
## [951]	{other vegetables,	=> {domestic eggs}	0.005185562	0.2142857	0.024199288	3
## [952]	whole milk}	=> {margarine}	0.005185562	0.1728814	0.029994916	2
## [953]	{margarine,	=> {other vegetables}	0.005897306	0.5321101	0.011082867	2
## [954]	root vegetables}	=> {root vegetables}	0.005897306	0.2989691	0.019725470	2
## [955]	{margarine,	=> {margarine}	0.005897306	0.1244635	0.047381800	2
## [956]	other vegetables}	=> {other vegetables}	0.005693950	0.4000000	0.014234875	2
## [957]	{yogurt}	=> {yogurt}	0.005693950	0.2886598	0.019725470	2
## [958]	{margarine,	=> {margarine}	0.005693950	0.1311475	0.043416370	2
## [959]	other vegetables}	=> {whole milk}	0.007015760	0.4928571	0.014234875	1
## [960]	{yogurt}	=> {yogurt}	0.007015760	0.2899160	0.024199288	2
## [961]	{whole milk,	=> {margarine}	0.007015760	0.1252269	0.056024403	2
## [962]	yogurt}	=> {other vegetables}	0.005185562	0.3517241	0.014743264	1
## [963]	{margarine,	=> {rolls/buns}	0.005185562	0.2628866	0.019725470	1
## [964]	other vegetables}	=> {margarine}	0.005185562	0.1217184	0.042602949	2
## [965]	{rolls/buns}	=> {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]	{margarine,	=> {margarine}	0.009252669	0.1236413	0.074834774	2
## [971]	whole milk}	=> {butter,				

##	domestic eggs}	=> {whole milk}	0.005998983	0.6210526	0.009659380	2
## [972]	{butter,	=> {domestic eggs}	0.005998983	0.2177122	0.027554652	3
##	whole milk}	=> {butter}	0.005998983	0.2000000	0.029994916	3
## [973]	{domestic eggs,	=> {other vegetables}	0.005795628	0.5700000	0.010167768	2
##	whole milk}	=> {whipped/sour cream}	0.005795628	0.2893401	0.020030503	4
## [974]	{butter,	=> {butter}	0.005795628	0.2007042	0.028876462	3
##	whipped/sour cream}	=> {whole milk}	0.006710727	0.6600000	0.010167768	2
## [975]	{butter,	=> {whipped/sour cream}	0.006710727	0.2435424	0.027554652	3
##	other vegetables}	=> {butter}	0.006710727	0.2082019	0.032231825	3
## [976]	{other vegetables,	=> {whole milk}	0.005083884	0.5555556	0.009150991	2
##	whipped/sour cream}	=> {whipped/sour cream}	0.005083884	0.1845018	0.027554652	2
## [977]	{butter,	=> {butter}	0.005083884	0.1666667	0.030503305	3
##	whipped/sour cream}	=> {whole milk}	0.005388917	0.6022727	0.008947636	2
## [978]	{butter,	=> {whole milk}	0.005388917	0.1955720	0.027554652	1
##	whole milk}	=> {citrus fruit}	0.005388917	0.1568047	0.034367056	2
## [979]	{whipped/sour cream,	=> {butter}	0.005490595	0.5510204	0.009964413	2
##	whole milk}	=> {whole milk}	0.005490595	0.2741117	0.020030503	2
## [980]	{butter,	=> {bottled water}	0.005490595	0.1529745	0.035892222	2
##	citrus fruit}	=> {butter}	0.006202339	0.6224490	0.009964413	2
## [981]	{butter,	=> {whole milk}	0.006202339	0.2250923	0.027554652	2
##	whole milk}	=> {tropical fruit}	0.006202339	0.1466346	0.042297916	2
## [982]	{citrus fruit,	=> {butter}	0.006609049	0.5118110	0.012913066	2
##	whole milk}	=> {tropical fruit}	0.006609049	0.3299492	0.020030503	3
## [983]	{bottled water,	=> {butter}	0.006609049	0.1394850	0.047381800	2
##	butter}	=> {whole milk}	0.008235892	0.6377953	0.012913066	2
## [984]	{butter,	=> {root vegetables}	0.008235892	0.2988930	0.027554652	2
##	whole milk}	=> {butter}	0.008235892	0.1683992	0.048906965	3
## [985]	{bottled water,	=> {whole milk}	0.008235892	0.1845018	0.027554652	2
##	whole milk}	=> {tropical fruit}	0.008235892	0.1666667	0.030503305	3
## [986]	{butter,	=> {butter}	0.008235892	0.1568047	0.034367056	2
##	tropical fruit}	=> {other vegetables}	0.008235892	0.5510204	0.009964413	2
## [987]	{butter,	=> {tropical fruit}	0.008235892	0.2741117	0.020030503	2
##	other vegetables}	=> {butter}	0.008235892	0.1529745	0.035892222	2
## [988]	{other vegetables,	=> {whole milk}	0.008235892	0.6224490	0.009964413	2
##	tropical fruit}	=> {bottled water}	0.008235892	0.2250923	0.027554652	2
## [989]	{butter,	=> {tropical fruit}	0.008235892	0.1466346	0.042297916	2
##	tropical fruit}	=> {butter}	0.008235892	0.5118110	0.012913066	2
## [990]	{butter,	=> {whole milk}	0.008235892	0.3299492	0.020030503	3
##	whole milk}	=> {root vegetables}	0.008235892	0.1394850	0.047381800	2
## [991]	{tropical fruit,	=> {butter}	0.008235892	0.1666667	0.030503305	3
##	whole milk}	=> {tropical fruit}	0.008235892	0.1568047	0.034367056	2
## [992]	{butter,	=> {butter}	0.008235892	0.5510204	0.009964413	2
##	root vegetables}	=> {other vegetables}	0.008235892	0.2741117	0.020030503	2
## [993]	{butter,	=> {root vegetables}	0.008235892	0.1529745	0.035892222	2
##	other vegetables}	=> {butter}	0.008235892	0.6224490	0.009964413	2
## [994]	{other vegetables,	=> {whole milk}	0.008235892	0.2250923	0.027554652	2
##	root vegetables}	=> {bottled water}	0.008235892	0.1466346	0.042297916	2
## [995]	{butter,	=> {butter}	0.008235892	0.5118110	0.012913066	2
##	root vegetables}	=> {whole milk}	0.008235892	0.3299492	0.020030503	3
## [996]	{butter,	=> {root vegetables}	0.008235892	0.1394850	0.047381800	2
##	whole milk}	=> {butter}	0.008235892	0.6377953	0.012913066	2
## [997]	{root vegetables,	=> {root vegetables}	0.008235892	0.2988930	0.027554652	2
##	whole milk}	=> {butter}	0.008235892	0.1683992	0.048906965	3
## [998]	{butter,	=> {butter}	0.008235892	0.1845018	0.027554652	2

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##      yogurt}          => {other vegetables} 0.006405694 0.4375000 0.014641586 2
## [999]  {butter,          => {yogurt}        0.006405694 0.3197970 0.020030503 2
##          other vegetables}  => {butter}        0.006405694 0.1475410 0.043416370 2
## [1000] {other vegetables,  => {whole milk}    0.009354347 0.6388889 0.014641586 2
##          yogurt}          => {yogurt}        0.009354347 0.3394834 0.027554652 2
## [1001] {butter,          => {butter}        0.009354347 0.1669691 0.056024403 3
##          yogurt}          => {other vegetables} 0.005693950 0.4242424 0.013421454 2
## [1002] {butter,          => {rolls/buns}   0.005693950 0.2842640 0.020030503 1
##          whole milk}       => {butter}        0.005693950 0.1336516 0.042602949 2
## [1003] {whole milk,      => {rolls/buns}   0.006609049 0.4924242 0.013421454 1
##          yogurt}          => {whole milk}    0.006609049 0.2398524 0.027554652 1
## [1004] {butter,          => {butter}        0.006609049 0.1166966 0.056634469 2
##          rolls/buns}       => {other vegetables} 0.011489578 0.5736041 0.020030503 2
## [1005] {butter,          => {whole milk}    0.011489578 0.4169742 0.027554652 2
##          other vegetables}=> {butter}        0.011489578 0.1535326 0.074834774 2
## [1006] {other vegetables,=> {whole milk}    0.005083884 0.4310345 0.011794611 1
##          rolls/buns}       => {tropical fruit} 0.005083884 0.1858736 0.027351296 1
## [1007] {butter,          => {butter}        0.005083884 0.1201923 0.042297916 1
##          rolls/buns}       => {newspapers}    0.005998983 0.5221239 0.011489578 2
## [1008] {butter,          => {other vegetables} 0.005998983 0.3105263 0.019318760 2
##          whole milk}       => {root vegetables} 0.005998983 0.1266094 0.047381800 1
## [1009] {rolls/buns,     => {newspapers}    0.005795628 0.5044248 0.011489578 1
##          whole milk}       => {whole milk}    0.005795628 0.2118959 0.027351296 1
## [1010] {butter,          => {root vegetables} 0.005795628 0.1185031 0.048906965 1
##          other vegetables}=> {newspapers}    0.005083884 0.3311258 0.015353330 1
## [1011] {butter,          => {rolls/buns}   0.005083884 0.2577320 0.019725470 1
##          whole milk}       => {yogurt}        0.005083884 0.1479290 0.034367056 1
## [1012] {other vegetables,=> {newspapers}    0.005083884 0.1479290 0.034367056 1
##          whole milk}       => {tropical fruit} 0.005083884 0.1479290 0.034367056 1
## [1013] {newspapers,      => {whole milk}    0.005083884 0.1479290 0.034367056 1
##          tropical fruit}  => {butter}        0.005083884 0.1479290 0.034367056 1
## [1014] {newspapers,      => {butter}        0.005083884 0.1479290 0.034367056 1
##          whole milk}       => {newspapers}    0.005083884 0.1479290 0.034367056 1
## [1015] {tropical fruit,=> {newspapers}    0.005083884 0.1479290 0.034367056 1
##          whole milk}       => {root vegetables} 0.005083884 0.1479290 0.034367056 1
## [1016] {newspapers,      => {newspapers}    0.005083884 0.1479290 0.034367056 1
##          root vegetables}=> {other vegetables} 0.005083884 0.1479290 0.034367056 1
## [1017] {newspapers,      => {root vegetables} 0.005083884 0.1479290 0.034367056 1
##          other vegetables}=> {newspapers}    0.005083884 0.1479290 0.034367056 1
## [1018] {other vegetables,=> {newspapers}    0.005083884 0.1479290 0.034367056 1
##          root vegetables}=> {whole milk}    0.005083884 0.1479290 0.034367056 1
## [1019] {newspapers,      => {whole milk}    0.005083884 0.1479290 0.034367056 1
##          root vegetables}=> {root vegetables} 0.005083884 0.1479290 0.034367056 1
## [1020] {newspapers,      => {root vegetables} 0.005083884 0.1479290 0.034367056 1
##          whole milk}       => {newspapers}    0.005083884 0.1479290 0.034367056 1
## [1021] {root vegetables,=> {newspapers}    0.005083884 0.1479290 0.034367056 1
##          whole milk}       => {rolls/buns}   0.005083884 0.1479290 0.034367056 1
## [1022] {newspapers,      => {rolls/buns}   0.005083884 0.1479290 0.034367056 1
##          yogurt}          => {yogurt}        0.005083884 0.1479290 0.034367056 1
## [1023] {newspapers,      => {yogurt}        0.005083884 0.1479290 0.034367056 1
##          rolls/buns}       => {newspapers}    0.005083884 0.1479290 0.034367056 1
## [1024] {rolls/buns,     => {yogurt}        0.005083884 0.1479290 0.034367056 1
##          yogurt}          => {newspapers}    0.005083884 0.1479290 0.034367056 1
## [1025] {newspapers,

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##      yogurt} => {other vegetables} 0.005592272 0.3642384 0.015353330 1
## [1026] {newspapers, => {yogurt} 0.005592272 0.2894737 0.019318760 2
##          other vegetables} => {newspapers} 0.005592272 0.1288056 0.043416370 1
## [1027] {other vegetables, => {whole milk} 0.006609049 0.4304636 0.015353330 1
##      yogurt} => {yogurt} 0.006609049 0.2416357 0.027351296 1
## [1028] {newspapers, => {newspapers} 0.006609049 0.1179673 0.056024403 1
##      yogurt} => {whole milk} 0.005490595 0.2783505 0.019725470 1
## [1029] {newspapers, => {yogurt} 0.005490595 0.2842105 0.019318760 1
##      whole milk} => {newspapers} 0.005490595 0.1288783 0.042602949 1
## [1030] {whole milk, => {other vegetables} 0.007625826 0.3865979 0.019725470 1
##      yogurt} => {rolls/buns} 0.007625826 0.2788104 0.027351296 1
## [1031] {newspapers, => {newspapers} 0.007625826 0.1346499 0.056634469 1
##      rolls/buns} => {whole milk} 0.008337570 0.4315789 0.019318760 1
## [1032] {newspapers, => {rolls/buns} 0.008337570 0.1114130 0.074834774 1
##      other vegetables} => {newspapers} 0.008337570 0.3048327 0.027351296 1
## [1033] {other vegetables, => {whole milk} 0.005083884 0.5102041 0.009964413 2
##      rolls/buns} => {other vegetables} 0.005083884 0.2283105 0.022267412 3
## [1034] {newspapers, => {whipped/sour cream} 0.005083884 0.1760563 0.028876462 2
##      rolls/buns} => {domestic eggs} 0.005693950 0.5714286 0.009964413 2
## [1035] {newspapers, => {whole milk} 0.005693950 0.1898305 0.029994916 2
##      whole milk} => {whipped/sour cream} 0.005693950 0.1766562 0.032231825 2
## [1036] {rolls/buns, => {domestic eggs} 0.005388917 0.6235294 0.008642603 2
##      whole milk} => {whole milk} 0.005388917 0.1796610 0.029994916 2
## [1037] {newspapers, => {pip fruit} 0.005388917 0.1790541 0.030096594 2
##      other vegetables} => {whole milk} 0.005693950 0.5490196 0.010371124 2
## [1038] {newspapers, => {domestic eggs} 0.005693950 0.1898305 0.029994916 2
##      whole milk} => {whole milk} 0.005693950 0.1866667 0.030503305 2
## [1039] {other vegetables, => {domestic eggs} 0.005693950 0.1790541 0.030096594 2
##      whole milk} => {newspapers} 0.005693950 0.1796610 0.029994916 2
## [1040] {domestic eggs, => {other vegetables} 0.005083884 0.5102041 0.009964413 2
##      whipped/sour cream} => {whipped/sour cream} 0.005083884 0.2283105 0.022267412 3
## [1041] {domestic eggs, => {domestic eggs} 0.005083884 0.1760563 0.028876462 2
##      other vegetables} => {whole milk} 0.005693950 0.5714286 0.009964413 2
## [1042] {other vegetables, => {whole milk} 0.005693950 0.1898305 0.029994916 2
##      whipped/sour cream} => {domestic eggs} 0.005693950 0.1766562 0.032231825 2
## [1043] {domestic eggs, => {whole milk} 0.005388917 0.6235294 0.008642603 2
##      whipped/sour cream} => {whipped/sour cream} 0.005388917 0.1796610 0.029994916 2
## [1044] {domestic eggs, => {domestic eggs} 0.005388917 0.1790541 0.030096594 2
##      whole milk} => {whole milk} 0.005693950 0.5490196 0.010371124 2
## [1045] {whipped/sour cream, => {whole milk} 0.005693950 0.1898305 0.029994916 2
##      whole milk} => {domestic eggs} 0.005693950 0.1766562 0.032231825 2
## [1046] {domestic eggs, => {whole milk} 0.005388917 0.6235294 0.008642603 2
##      pip fruit} => {whole milk} 0.005388917 0.1796610 0.029994916 2
## [1047] {domestic eggs, => {pip fruit} 0.005388917 0.1790541 0.030096594 2
##      whole milk} => {domestic eggs} 0.005693950 0.5490196 0.010371124 2
## [1048] {pip fruit, => {whole milk} 0.005693950 0.1898305 0.029994916 2
##      whole milk} => {citrus fruit} 0.005693950 0.1796610 0.029994916 2
## [1049] {citrus fruit, => {whole milk} 0.005693950 0.1790541 0.030096594 2
##      domestic eggs} => {whole milk} 0.005693950 0.1898305 0.029994916 2
## [1050] {domestic eggs, => {citrus fruit} 0.005693950 0.1766562 0.032231825 2
##      whole milk} => {domestic eggs} 0.005693950 0.1866667 0.030503305 2
## [1051] {citrus fruit, => {whole milk} 0.005693950 0.1866667 0.030503305 2
##      whole milk} => {domestic eggs} 0.005693950 0.1796610 0.029994916 2
## [1052] {domestic eggs,

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##      tropical fruit}          => {whole milk}          0.006914082 0.6071429 0.011387900 2
## [1053] {domestic eggs,       => {tropical fruit} 0.006914082 0.2305085 0.029994916 2
##      whole milk}           => {domestic eggs}   0.006914082 0.1634615 0.042297916 2
## [1054] {tropical fruit,     => {other vegetables} 0.007320793 0.5106383 0.014336553 2
##      whole milk}           => {root vegetables} 0.007320793 0.3287671 0.022267412 3
## [1055] {domestic eggs,     => {domestic eggs}    0.007320793 0.1545064 0.047381800 2
##      root vegetables}      => {whole milk}        0.008540925 0.5957447 0.014336553 2
## [1056] {domestic eggs,     => {root vegetables} 0.008540925 0.2847458 0.029994916 2
##      other vegetables}     => {domestic eggs}    0.008540925 0.1746362 0.048906965 2
## [1057] {other vegetables, => {other vegetables} 0.005083884 0.4098361 0.012404677 2
##      root vegetables}      => {soda}              0.005083884 0.2283105 0.022267412 1
## [1058] {domestic eggs,     => {domestic eggs}    0.005083884 0.1552795 0.032740214 2
##      root vegetables}      => {whole milk}        0.005185562 0.4180328 0.012404677 1
## [1059] {domestic eggs,     => {other vegetables} 0.005185562 0.1728814 0.029994916 0
##      whole milk}           => {soda}              0.005185562 0.1294416 0.040061007 2
## [1060] {root vegetables,   => {domestic eggs}    0.005185562 0.4042553 0.014336553 2
##      whole milk}           => {whole milk}        0.005185562 0.2602740 0.022267412 1
## [1061] {domestic eggs,     => {other vegetables} 0.005795628 0.05795628 0.029994916 1
##      soda}                 => {domestic eggs}    0.005795628 0.1334895 0.043416370 2
## [1062] {domestic eggs,     => {whole milk}        0.005795628 0.5390071 0.014336553 2
##      other vegetables}     => {soda}              0.005795628 0.2576271 0.029994916 1
## [1063] {other vegetables, => {domestic eggs}    0.005795628 0.1379310 0.056024403 2
##      soda}                 => {other vegetables} 0.005897306 0.3766234 0.015658363 1
## [1064] {domestic eggs,     => {yogurt}            0.005897306 0.2648402 0.022267412 1
##      soda}                 => {domestic eggs}    0.005897306 0.1384248 0.042602949 2
## [1065] {domestic eggs,     => {whole milk}        0.006609049 0.4220779 0.015658363 1
##      whole milk}           => {yogurt}            0.006609049 0.2203390 0.029994916 1
## [1066] {soda,               => {domestic eggs}    0.006609049 0.1166966 0.056634469 1
##      whole milk}           => {whole milk}        0.006609049 0.2283105 0.022267412 1
## [1067] {domestic eggs,     => {other vegetables} 0.006609049 0.1552795 0.032740214 2
##      yogurt}                => {domestic eggs}    0.006609049 0.1334895 0.043416370 2
## [1068] {domestic eggs,     => {yogurt}             0.006609049 0.5390071 0.014336553 2
##      other vegetables}     => {whole milk}        0.006609049 0.2576271 0.029994916 1
## [1069] {other vegetables, => {domestic eggs}    0.006609049 0.1379310 0.056024403 2
##      yogurt}                => {other vegetables} 0.006609049 0.3766234 0.015658363 1
## [1070] {domestic eggs,     => {yogurt}            0.006609049 0.2648402 0.022267412 1
##      yogurt}                => {domestic eggs}    0.006609049 0.1384248 0.042602949 2
## [1071] {domestic eggs,     => {whole milk}        0.006609049 0.4220779 0.015658363 1
##      whole milk}           => {yogurt}            0.006609049 0.2203390 0.029994916 1
## [1072] {whole milk,         => {domestic eggs}    0.006609049 0.1166966 0.056634469 1
##      yogurt}                => {other vegetables} 0.006609049 0.2283105 0.022267412 1
## [1073] {domestic eggs,     => {rolls/buns}        0.006609049 0.1552795 0.032740214 2
##      rolls/buns}            => {domestic eggs}    0.006609049 0.1334895 0.043416370 2
## [1074] {domestic eggs,     => {rolls/buns}        0.006609049 0.5390071 0.014336553 2
##      other vegetables}     => {whole milk}        0.006609049 0.2576271 0.029994916 1
## [1075] {other vegetables, => {rolls/buns}        0.006609049 0.1379310 0.056024403 2
##      rolls/buns}            => {domestic eggs}    0.006609049 0.3766234 0.015658363 1
## [1076] {domestic eggs,     => {domestic eggs}    0.006609049 0.2648402 0.022267412 1
##      rolls/buns}            => {whole milk}        0.006609049 0.1384248 0.042602949 2
## [1077] {domestic eggs,     => {rolls/buns}        0.006609049 0.4220779 0.015658363 1
##      whole milk}           => {rolls/buns}        0.006609049 0.2203390 0.029994916 1
## [1078] {rolls/buns,         => {domestic eggs}    0.006609049 0.1166966 0.056634469 1
##      whole milk}           => {whole milk}        0.006609049 0.2283105 0.022267412 1
## [1079] {domestic eggs,

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##      other vegetables}          => {whole milk}           0.012302999  0.5525114  0.022267412 2
## [1080] {domestic eggs,        => {other vegetables}  0.012302999  0.4101695  0.029994916 2
##      whole milk}              => {domestic eggs}    0.012302999  0.1644022  0.074834774 2
## [1081] {other vegetables,    => {soda}               0.005185562  0.3642857  0.014234875 2
##      whole milk}              => {bottled water}   0.005185562  0.2817680  0.018403660 2
## [1082] {bottled water,       => {fruit/vegetable juice} 0.005185562  0.1789474  0.028978139 2
##      fruit/vegetable juice}   => {whole milk}        0.005795628  0.4071429  0.014234875 1
## [1083] {fruit/vegetable juice,=> {bottled water}   0.005795628  0.2175573  0.026639553 1
##      soda}                   => {fruit/vegetable juice} 0.005795628  0.1686391  0.034367056 2
## [1084] {bottled water,       => {whole milk}        0.005795628  0.4814815  0.013726487 2
##      soda}                   => {bottled water}   0.006609049  0.3140097  0.021047280 2
## [1085] {bottled water,       => {fruit/vegetable juice} 0.006609049  0.1841360  0.035892222 2
##      fruit/vegetable juice}  => {other vegetables}  0.006609049  0.4370370  0.013726487 1
## [1086] {fruit/vegetable juice,=> {tropical fruit}   0.006609049  0.3140097  0.021047280 2
##      whole milk}              => {fruit/vegetable juice} 0.006609049  0.1418269  0.042297916 1
## [1087] {bottled water,       => {whole milk}        0.006609049  0.5508475  0.011997966 2
##      whole milk}              => {tropical fruit}   0.006609049  0.3140097  0.021047280 2
## [1088] {fruit/vegetable juice,=> {fruit/vegetable juice} 0.006609049  0.1394850  0.047381800 1
##      tropical fruit}         => {other vegetables}  0.006609049  0.006507372  0.5423729  0.011997966 2
## [1089] {fruit/vegetable juice,=> {root vegetables}  0.006609049  0.2442748  0.026639553 2
##      other vegetables}       => {fruit/vegetable juice} 0.006609049  0.1330561  0.048906965 1
## [1090] {other vegetables,    => {whole milk}        0.006609049  0.006507372  0.2762431  0.018403660 1
##      tropical fruit}         => {root vegetables}  0.006609049  0.005083884  0.2717391  0.018708693 1
## [1091] {fruit/vegetable juice,=> {yogurt}            0.006609049  0.005083884  0.1858736  0.027351296 2
##      tropical fruit}         => {soda}              0.006609049  0.006100661  0.3314917  0.018403660 1
## [1092] {fruit/vegetable juice,=> {whole milk}        0.006609049  0.006100661  0.2290076  0.026639553 1
##      whole milk}              => {soda}             0.006609049  0.006100661  0.1522843  0.040061007 2
## [1093] {tropical fruit,      => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      whole milk}              => {root vegetables}  0.006609049  0.006100661  0.1522843  0.040061007 2
## [1094] {fruit/vegetable juice,=> {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      root vegetables}        => {other vegetables}  0.006609049  0.006100661  0.1522843  0.040061007 2
## [1095] {fruit/vegetable juice,=> {root vegetables}  0.006609049  0.006100661  0.1522843  0.040061007 2
##      other vegetables}       => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
## [1096] {other vegetables,    => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      root vegetables}        => {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
## [1097] {fruit/vegetable juice,=> {root vegetables}  0.006609049  0.006100661  0.1522843  0.040061007 2
##      root vegetables}        => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
## [1098] {fruit/vegetable juice,=> {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
##      whole milk}              => {root vegetables}  0.006609049  0.006100661  0.1522843  0.040061007 2
## [1099] {root vegetables,     => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      whole milk}              => {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
## [1100] {fruit/vegetable juice,=> {yogurt}            0.006609049  0.006100661  0.1522843  0.040061007 2
##      soda}                   => {soda}              0.006609049  0.006100661  0.1522843  0.040061007 2
## [1101] {fruit/vegetable juice,=> {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      yogurt}                 => {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
## [1102] {soda,                  => {soda}               0.006609049  0.006100661  0.1522843  0.040061007 2
##      yogurt}                 => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
## [1103] {fruit/vegetable juice,=> {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
##      soda}                   => {soda}              0.006609049  0.006100661  0.1522843  0.040061007 2
## [1104] {fruit/vegetable juice,=> {whole milk}        0.006609049  0.006100661  0.1522843  0.040061007 2
##      whole milk}              => {soda}             0.006609049  0.006100661  0.1522843  0.040061007 2
## [1105] {soda,                  => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
##      whole milk}              => {fruit/vegetable juice} 0.006609049  0.006100661  0.1522843  0.040061007 2
## [1106] {fruit/vegetable juice,

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## yogurt}	=> {other vegetables}	0.008235892	0.4402174	0.018708693	2
## [1107] {fruit/vegetable juice, ## other vegetables}	=> {yogurt}	0.008235892	0.3913043	0.021047280	2
## [1108] {other vegetables, ## yogurt}	=> {fruit/vegetable juice}	0.008235892	0.1896956	0.043416370	2
## [1109] {fruit/vegetable juice, ## yogurt}	=> {whole milk}	0.009456024	0.5054348	0.018708693	1
## [1110] {fruit/vegetable juice, ## whole milk}	=> {yogurt}	0.009456024	0.3549618	0.026639553	2
## [1111] {whole milk, ## yogurt}	=> {fruit/vegetable juice}	0.009456024	0.1687840	0.056024403	2
## [1112] {fruit/vegetable juice, ## rolls/buns}	=> {whole milk}	0.005592272	0.3846154	0.014539908	1
## [1113] {fruit/vegetable juice, ## whole milk}	=> {rolls/buns}	0.005592272	0.2099237	0.026639553	1
## [1114] {fruit/vegetable juice, ## other vegetables}	=> {whole milk}	0.010472801	0.4975845	0.021047280	1
## [1115] {fruit/vegetable juice, ## whole milk}	=> {other vegetables}	0.010472801	0.3931298	0.026639553	2
## [1116] {other vegetables, ## whole milk}	=> {fruit/vegetable juice}	0.010472801	0.1399457	0.074834774	1
## [1117] {pip fruit, ## whipped/sour cream}	=> {other vegetables}	0.005592272	0.6043956	0.009252669	3
## [1118] {other vegetables, ## whipped/sour cream}	=> {pip fruit}	0.005592272	0.1936620	0.028876462	2
## [1119] {other vegetables, ## pip fruit}	=> {whipped/sour cream}	0.005592272	0.2140078	0.026131164	2
## [1120] {pip fruit, ## whipped/sour cream}	=> {whole milk}	0.005998983	0.6483516	0.009252669	2
## [1121] {whipped/sour cream, ## whole milk}	=> {pip fruit}	0.005998983	0.1861199	0.032231825	2
## [1122] {pip fruit, ## whole milk}	=> {whipped/sour cream}	0.005998983	0.1993243	0.030096594	2
## [1123] {citrus fruit, ## whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2
## [1124] {other vegetables, ## whipped/sour cream}	=> {citrus fruit}	0.005693950	0.1971831	0.028876462	2
## [1125] {citrus fruit, ## other vegetables}	=> {whipped/sour cream}	0.005693950	0.1971831	0.028876462	2
## [1126] {citrus fruit, ## whipped/sour cream}	=> {whole milk}	0.006304016	0.5794393	0.010879512	2
## [1127] {whipped/sour cream, ## whole milk}	=> {citrus fruit}	0.006304016	0.1955836	0.032231825	2
## [1128] {citrus fruit, ## whole milk}	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305	2
## [1129] {sausage, ## whipped/sour cream}	=> {whole milk}	0.005083884	0.5617978	0.009049314	2
## [1130] {whipped/sour cream, ## whole milk}	=> {sausage}	0.005083884	0.1577287	0.032231825	1
## [1131] {sausage, ## whole milk}	=> {whipped/sour cream}	0.005083884	0.1700680	0.029893238	2
## [1132] {tropical fruit, ## whipped/sour cream}	=> {yogurt}	0.006202339	0.4485294	0.013828165	3
## [1133] {whipped/sour cream,					

## yogurt}	=> {tropical fruit}	0.006202339	0.2990196	0.020742247	2
## [1134] {tropical fruit, ## yogurt}	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172	2
## [1135] {tropical fruit, ## whipped/sour cream}	=> {other vegetables}	0.007829181	0.5661765	0.013828165	2
## [1136] {other vegetables, ## whipped/sour cream}	=> {tropical fruit}	0.007829181	0.2711268	0.028876462	2
## [1137] {other vegetables, ## tropical fruit}	=> {whipped/sour cream}	0.007829181	0.2181303	0.035892222	3
## [1138] {tropical fruit, ## whipped/sour cream}	=> {whole milk}	0.007930859	0.5735294	0.013828165	2
## [1139] {whipped/sour cream, ## whole milk}	=> {tropical fruit}	0.007930859	0.2460568	0.032231825	2
## [1140] {tropical fruit, ## whole milk}	=> {whipped/sour cream}	0.007930859	0.1875000	0.042297916	2
## [1141] {root vegetables, ## whipped/sour cream}	=> {yogurt}	0.006405694	0.3750000	0.017081851	2
## [1142] {whipped/sour cream, ## yogurt}	=> {root vegetables}	0.006405694	0.3088235	0.020742247	2
## [1143] {root vegetables, ## yogurt}	=> {whipped/sour cream}	0.006405694	0.2480315	0.025826131	3
## [1144] {root vegetables, ## whipped/sour cream}	=> {other vegetables}	0.008540925	0.5000000	0.017081851	2
## [1145] {other vegetables, ## whipped/sour cream}	=> {root vegetables}	0.008540925	0.2957746	0.028876462	2
## [1146] {other vegetables, ## root vegetables}	=> {whipped/sour cream}	0.008540925	0.1802575	0.047381800	2
## [1147] {root vegetables, ## whipped/sour cream}	=> {whole milk}	0.009456024	0.5535714	0.017081851	2
## [1148] {whipped/sour cream, ## whole milk}	=> {root vegetables}	0.009456024	0.2933754	0.032231825	2
## [1149] {root vegetables, ## whole milk}	=> {whipped/sour cream}	0.009456024	0.1933472	0.048906965	2
## [1150] {soda, ## whipped/sour cream}	=> {whole milk}	0.005490595	0.4736842	0.011591256	1
## [1151] {whipped/sour cream, ## whole milk}	=> {soda}	0.005490595	0.1703470	0.032231825	0
## [1152] {soda, ## whole milk}	=> {whipped/sour cream}	0.005490595	0.1370558	0.040061007	1
## [1153] {whipped/sour cream, ## yogurt}	=> {other vegetables}	0.010167768	0.4901961	0.020742247	2
## [1154] {other vegetables, ## whipped/sour cream}	=> {yogurt}	0.010167768	0.3521127	0.028876462	2
## [1155] {other vegetables, ## yogurt}	=> {whipped/sour cream}	0.010167768	0.2341920	0.043416370	3
## [1156] {whipped/sour cream, ## yogurt}	=> {whole milk}	0.010879512	0.5245098	0.020742247	2
## [1157] {whipped/sour cream, ## whole milk}	=> {yogurt}	0.010879512	0.3375394	0.032231825	2
## [1158] {whole milk, ## yogurt}	=> {whipped/sour cream}	0.010879512	0.1941924	0.056024403	2
## [1159] {rolls/buns, ## whipped/sour cream}	=> {other vegetables}	0.006710727	0.4583333	0.014641586	2
## [1160] {other vegetables,					

##	whipped/sour cream}	=> {rolls/buns}	0.006710727	0.2323944	0.028876462	1
## [1161]	{other vegetables, rolls/buns}	=> {whipped/sour cream}	0.006710727	0.1575179	0.042602949	2
## [1162]	{rolls/buns, whipped/sour cream}	=> {whole milk}	0.007829181	0.5347222	0.014641586	2
## [1163]	{whipped/sour cream, whole milk}	=> {rolls/buns}	0.007829181	0.2429022	0.032231825	1
## [1164]	{rolls/buns, whole milk}	=> {whipped/sour cream}	0.007829181	0.1382406	0.056634469	1
## [1165]	{other vegetables, whipped/sour cream}	=> {whole milk}	0.014641586	0.5070423	0.028876462	1
## [1166]	{whipped/sour cream, whole milk}	=> {other vegetables}	0.014641586	0.4542587	0.032231825	2
## [1167]	{other vegetables, whole milk}	=> {whipped/sour cream}	0.014641586	0.1956522	0.074834774	2
## [1168]	{pastry, pip fruit}	=> {whole milk}	0.005083884	0.4761905	0.010676157	1
## [1169]	{pip fruit, whole milk}	=> {pastry}	0.005083884	0.1689189	0.030096594	1
## [1170]	{pastry, whole milk}	=> {pip fruit}	0.005083884	0.1529052	0.033248602	2
## [1171]	{citrus fruit, pip fruit}	=> {tropical fruit}	0.005592272	0.4044118	0.013828165	3
## [1172]	{pip fruit, tropical fruit}	=> {citrus fruit}	0.005592272	0.2736318	0.020437214	3
## [1173]	{citrus fruit, tropical fruit}	=> {pip fruit}	0.005592272	0.2806122	0.019928826	3
## [1174]	{citrus fruit, pip fruit}	=> {other vegetables}	0.005897306	0.4264706	0.013828165	2
## [1175]	{other vegetables, pip fruit}	=> {citrus fruit}	0.005897306	0.2256809	0.026131164	2
## [1176]	{citrus fruit, other vegetables}	=> {pip fruit}	0.005897306	0.2042254	0.028876462	2
## [1177]	{citrus fruit, pip fruit}	=> {whole milk}	0.005185562	0.3750000	0.013828165	1
## [1178]	{pip fruit, whole milk}	=> {citrus fruit}	0.005185562	0.1722973	0.030096594	2
## [1179]	{citrus fruit, whole milk}	=> {pip fruit}	0.005185562	0.1700000	0.030503305	2
## [1180]	{pip fruit, sausage}	=> {whole milk}	0.005592272	0.5188679	0.010777834	2
## [1181]	{pip fruit, whole milk}	=> {sausage}	0.005592272	0.1858108	0.030096594	1
## [1182]	{sausage, whole milk}	=> {pip fruit}	0.005592272	0.1870748	0.029893238	2
## [1183]	{pip fruit, tropical fruit}	=> {root vegetables}	0.005287239	0.2587065	0.020437214	2
## [1184]	{pip fruit, root vegetables}	=> {tropical fruit}	0.005287239	0.3398693	0.015556685	3
## [1185]	{root vegetables, tropical fruit}	=> {pip fruit}	0.005287239	0.2512077	0.021047280	3
## [1186]	{pip fruit, tropical fruit}	=> {yogurt}	0.006405694	0.3134328	0.020437214	2
## [1187]	{pip fruit,					

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##      yogurt}          => {tropical fruit}          0.006405694  0.3559322 0.017996950 3
## [1188] {tropical fruit,    => {pip fruit}           0.006405694  0.2187500 0.029283172 2
##      yogurt}          => {other vegetables}        0.009456024  0.4626866 0.020437214 2
## [1189] {pip fruit,       => {tropical fruit}          0.009456024  0.3618677 0.026131164 3
##      tropical fruit}    => {pip fruit}           0.009456024  0.2634561 0.035892222 3
## [1190] {other vegetables,=> {whole milk}            0.008439248  0.4129353 0.020437214 1
##      pip fruit}          => {tropical fruit}          0.008439248  0.2804054 0.030096594 2
## [1191] {other vegetables,=> {pip fruit}           0.008439248  0.1995192 0.042297916 2
##      tropical fruit}     => {root vegetables}        0.005287239  0.3398693 0.015556685 2
## [1192] {pip fruit,       => {yogurt}              0.005287239  0.2937853 0.017996950 2
##      tropical fruit}     => {root vegetables}        0.005287239  0.2047244 0.025826131 2
## [1193] {pip fruit,       => {other vegetables}        0.008134215  0.5228758 0.015556685 2
##      whole milk}          => {root vegetables}        0.008134215  0.3112840 0.026131164 2
## [1194] {tropical fruit,   => {pip fruit}           0.008134215  0.1716738 0.047381800 2
##      whole milk}          => {other vegetables}        0.008947636  0.5751634 0.015556685 2
## [1195] {pip fruit,       => {root vegetables}        0.008947636  0.2972973 0.030096594 2
##      root vegetables}    => {pip fruit}           0.008947636  0.1829522 0.048906965 2
## [1196] {pip fruit,       => {whole milk}            0.008947636  0.4519774 0.017996950 2
##      yogurt}              => {other vegetables}        0.008134215  0.3112840 0.026131164 2
## [1197] {root vegetables,=> {yogurt}              0.008134215  0.1873536 0.043416370 2
##      yogurt}              => {pip fruit}           0.009557702  0.5310734 0.017996950 2
## [1198] {pip fruit,       => {whole milk}            0.009557702  0.3175676 0.030096594 2
##      root vegetables}    => {yogurt}              0.009557702  0.1705989 0.056024403 2
## [1199] {other vegetables,=> {pip fruit}           0.005083884  0.3649635 0.013929842 1
##      pip fruit}          => {other vegetables}        0.005083884  0.1945525 0.026131164 1
## [1200] {other vegetables,=> {rolls/buns}           0.005083884  0.1193317 0.042602949 1
##      root vegetables}    => {pip fruit}           0.006202339  0.4452555 0.013929842 1
## [1201] {pip fruit,       => {whole milk}            0.006202339  0.2284722 0.030096594 2
##      root vegetables}    => {yogurt}              0.006202339  0.1242361 0.043416370 2
## [1202] {pip fruit,       => {root vegetables}        0.008134215  0.5310734 0.017996950 2
##      whole milk}          => {yogurt}              0.008134215  0.3175676 0.030096594 2
## [1203] {root vegetables,=> {pip fruit}           0.008134215  0.1705989 0.056024403 2
##      whole milk}          => {other vegetables}        0.008947636  0.5751634 0.015556685 2
## [1204] {pip fruit,       => {whole milk}            0.008947636  0.3112840 0.026131164 2
##      yogurt}              => {other vegetables}        0.008134215  0.1829522 0.048906965 2
## [1205] {other vegetables,=> {yogurt}              0.008134215  0.4519774 0.017996950 2
##      pip fruit}          => {root vegetables}        0.008947636  0.2284722 0.030096594 2
## [1206] {other vegetables,=> {pip fruit}           0.008947636  0.1242361 0.043416370 2
##      yogurt}              => {whole milk}            0.009557702  0.5310734 0.017996950 2
## [1207] {pip fruit,       => {yogurt}              0.009557702  0.3175676 0.030096594 2
##      yogurt}              => {pip fruit}           0.008134215  0.1705989 0.056024403 2
## [1208] {pip fruit,       => {whole milk}            0.008134215  0.1873536 0.043416370 2
##      whole milk}          => {yogurt}              0.009557702  0.5310734 0.017996950 2
## [1209] {whole milk,      => {pip fruit}           0.009557702  0.3112840 0.026131164 2
##      yogurt}              => {other vegetables}        0.005083884  0.1945525 0.026131164 1
## [1210] {pip fruit,       => {rolls/buns}           0.005083884  0.1193317 0.042602949 1
##      rolls/buns}          => {pip fruit}           0.006202339  0.4452555 0.013929842 1
## [1211] {other vegetables,=> {pip fruit}           0.006202339  0.2284722 0.030096594 2
##      pip fruit}          => {rolls/buns}           0.005083884  0.1242361 0.043416370 2
## [1212] {other vegetables,=> {pip fruit}           0.005083884  0.5310734 0.017996950 2
##      rolls/buns}          => {whole milk}            0.008134215  0.3175676 0.030096594 2
## [1213] {pip fruit,       => {whole milk}            0.008134215  0.1705989 0.056024403 2
##      rolls/buns}          => {yogurt}              0.009557702  0.4519774 0.017996950 2
## [1214] {pip fruit,

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##      whole milk}          => {rolls/buns}          0.006202339 0.2060811 0.030096594 1
## [1215] {rolls/buns,       => {pip fruit}           0.006202339 0.1095153 0.056634469 1
##      whole milk}          => {whole milk}          0.013523132 0.5175097 0.026131164 2
## [1216] {other vegetables,=> {other vegetables} 0.013523132 0.4493243 0.030096594 2
##      pip fruit}           => {whole milk}          0.013523132 0.1807065 0.074834774 2
## [1217] {pip fruit,        => {other vegetables} 0.005693950 0.4552846 0.012506355 1
##      whole milk}           => {whole milk}          0.005693950 0.1712538 0.033248602 1
## [1218] {other vegetables,=> {sausage}             0.005693950 0.1904762 0.029893238 2
##      whole milk}            => {pastry}              0.005693950 0.3846154 0.013218099 1
## [1219] {pastry,            => {whole milk}          0.005693950 0.2252252 0.022572445 2
##      sausage}               => {pastry}              0.005693950 0.1416431 0.035892222 1
## [1220] {pastry,            => {tropical fruit}    0.006710727 0.5076923 0.013218099 1
##      whole milk}            => {other vegetables} 0.006710727 0.2018349 0.033248602 1
## [1221] {sausage,           => {tropical fruit}    0.006710727 0.1586538 0.042297916 1
##      whole milk}            => {pastry}              0.006710727 0.5370370 0.010981190 2
## [1222] {pastry,            => {root vegetables}   0.006710727 0.2612613 0.022572445 2
##      tropical fruit}        => {pastry}              0.006710727 0.1244635 0.047381800 1
## [1223] {other vegetables,=> {tropical fruit}    0.005693950 0.5185185 0.010981190 2
##      pastry}                => {pastry}              0.005693950 0.1712538 0.033248602 1
## [1224] {other vegetables,=> {root vegetables}   0.005693950 0.1164241 0.048906965 1
##      tropical fruit}        => {whole milk}          0.005693950 0.2560386 0.021047280 1
## [1225] {pastry,            => {rolls/buns}          0.005388917 0.2572816 0.020945602 1
##      tropical fruit}        => {soda}                0.005388917 0.1405836 0.038332486 1
## [1226] {pastry,            => {pastry}              0.005388917 0.005490595 0.2608696 0.021047280 1
##      whole milk}             => {other vegetables} 0.005388917 0.2432432 0.022572445 1
## [1227] {tropical fruit,    => {soda}                0.005388917 0.1677019 0.032740214 1
##      whole milk}            => {pastry}              0.008235892 0.3913043 0.021047280 1
## [1228] {pastry,            => {whole milk}          0.008235892 0.2060811 0.030096594 1
##      root vegetables}       => {pastry}              0.008235892 0.1095153 0.056634469 1
## [1229] {other vegetables,=> {pastry}              0.008235892 0.1712538 0.033248602 1
##      pastry}                 => {root vegetables} 0.008235892 0.1244635 0.047381800 1
## [1230] {other vegetables,=> {pastry}              0.008235892 0.5185185 0.010981190 2
##      root vegetables}       => {whole milk}          0.008235892 0.1712538 0.033248602 1
## [1231] {pastry,            => {root vegetables}   0.008235892 0.1164241 0.048906965 1
##      root vegetables}       => {rolls/buns}          0.008235892 0.2560386 0.021047280 1
## [1232] {pastry,            => {soda}                0.008235892 0.2572816 0.020945602 1
##      whole milk}             => {pastry}              0.008235892 0.1405836 0.038332486 1
## [1233] {root vegetables,   => {pastry}              0.008235892 0.005490595 0.2608696 0.021047280 1
##      whole milk}            => {whole milk}          0.008235892 0.2432432 0.022572445 1
## [1234] {pastry,            => {soda}                0.008235892 0.1677019 0.032740214 1
##      soda}                  => {pastry}              0.008235892 0.1244635 0.047381800 1
## [1235] {pastry,            => {rolls/buns}          0.008235892 0.5185185 0.010981190 2
##      rolls/buns}             => {pastry}              0.008235892 0.1712538 0.033248602 1
## [1236] {rolls/buns,        => {soda}                0.008235892 0.1164241 0.048906965 1
##      soda}                  => {pastry}              0.008235892 0.2560386 0.021047280 1
## [1237] {pastry,            => {pastry}              0.008235892 0.005490595 0.2608696 0.021047280 1
##      soda}                  => {other vegetables} 0.008235892 0.2432432 0.022572445 1
## [1238] {other vegetables,=> {soda}                0.008235892 0.1677019 0.032740214 1
##      pastry}                 => {pastry}              0.008235892 0.1244635 0.047381800 1
## [1239] {other vegetables,=> {soda}                0.008235892 0.1244635 0.047381800 1
##      soda}                  => {pastry}              0.008235892 0.5185185 0.010981190 2
## [1240] {pastry,            => {whole milk}          0.008235892 0.1712538 0.033248602 1
##      soda}                  => {pastry}              0.008235892 0.1164241 0.048906965 1
## [1241] {pastry,

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##      whole milk}          => {soda}          0.008235892 0.2477064 0.033248602 1
## [1242] {soda,           => {pastry}        0.008235892 0.2055838 0.040061007 2
##      whole milk}          => {rolls/buns}    0.005795628 0.3275862 0.017691917 1
## [1243] {pastry,          => {yogurt}         0.005795628 0.2766990 0.020945602 1
##      yogurt}             => {pastry}         0.005795628 0.1686391 0.034367056 1
## [1244] {pastry,          => {other vegetables} 0.006609049 0.3735632 0.017691917 1
##      rolls/buns}          => {yogurt}         0.006609049 0.2927928 0.022572445 2
## [1245] {rolls/buns,      => {pastry}         0.006609049 0.1522248 0.043416370 1
##      yogurt}              => {whole milk}     0.009150991 0.5172414 0.017691917 2
## [1246] {pastry,          => {yogurt}         0.009150991 0.2752294 0.033248602 1
##      yogurt}              => {pastry}         0.009150991 0.1633394 0.056024403 1
## [1247] {other vegetables,=> {other vegetables} 0.006100661 0.2912621 0.020945602 1
##      pastry}               => {yogurt}         0.006100661 0.2702703 0.022572445 1
## [1248] {other vegetables,=> {pastry}         0.006100661 0.1431981 0.042602949 1
##      yogurt}              => {other vegetables} 0.008540925 0.4077670 0.020945602 1
## [1249] {pastry,          => {rolls/buns}     0.008540925 0.2568807 0.033248602 1
##      yogurt}              => {pastry}         0.008540925 0.1508079 0.056634469 1
## [1250] {pastry,          => {whole milk}     0.010574479 0.4684685 0.022572445 1
##      whole milk}           => {pastry}         0.010574479 0.3180428 0.033248602 1
## [1251] {whole milk,      => {other vegetables} 0.010574479 0.1413043 0.074834774 1
##      yogurt}              => {rolls/buns}     0.005083884 0.3759398 0.013523132 1
## [1252] {pastry,          => {bottled water}   0.005083884 0.1760563 0.028876462 1
##      rolls/buns}           => {pastry}         0.005083884 0.2049180 0.024809354 2
## [1253] {other vegetables,=> {other vegetables} 0.005083884 0.4360902 0.013523132 1
##      pastry}               => {whole milk}     0.005897306 0.1933333 0.030503305 1
## [1254] {other vegetables,=> {bottled water}   0.005897306 0.1715976 0.034367056 2
##      rolls/buns}           => {citrus fruit}    0.005897306 0.2857143 0.019928826 2
## [1255] {pastry,          => {whole milk}     0.005693950 0.2752294 0.033248602 1
##      rolls/buns}           => {pastry}         0.005693950 0.1633394 0.056024403 1
## [1256] {pastry,          => {rolls/buns}     0.005693950 0.2568807 0.033248602 1
##      whole milk}           => {pastry}         0.005693950 0.1508079 0.056634469 1
## [1257] {rolls/buns,      => {whole milk}     0.005693950 0.4684685 0.022572445 1
##      whole milk}           => {pastry}         0.005693950 0.3180428 0.033248602 1
## [1258] {other vegetables,=> {other vegetables} 0.005693950 0.1413043 0.074834774 1
##      pastry}               => {whole milk}     0.005693950 0.1933333 0.030503305 1
## [1259] {pastry,          => {whole milk}     0.005693950 0.1715976 0.034367056 2
##      whole milk}           => {other vegetables} 0.005693950 0.2857143 0.019928826 2
## [1260] {other vegetables,=> {pastry}         0.005693950 0.2752294 0.033248602 1
##      whole milk}           => {whole milk}     0.005693950 0.1633394 0.056024403 1
## [1261] {bottled water,    => {other vegetables} 0.005693950 0.2568807 0.033248602 1
##      citrus fruit}         => {bottled water}   0.005693950 0.1508079 0.056634469 1
## [1262] {citrus fruit,     => {pastry}         0.005693950 0.4684685 0.022572445 1
##      other vegetables}     => {whole milk}     0.005693950 0.3180428 0.033248602 1
## [1263] {bottled water,    => {bottled water}   0.005693950 0.1413043 0.074834774 1
##      other vegetables}     => {citrus fruit}    0.005693950 0.1933333 0.030503305 1
## [1264] {bottled water,    => {whole milk}     0.005693950 0.1715976 0.034367056 2
##      citrus fruit}         => {bottled water}   0.005693950 0.2857143 0.019928826 2
## [1265] {citrus fruit,     => {whole milk}     0.005693950 0.2752294 0.033248602 1
##      whole milk}           => {bottled water}   0.005693950 0.1633394 0.056024403 1
## [1266] {bottled water,    => {citrus fruit}    0.005693950 0.2568807 0.033248602 1
##      whole milk}           => {citrus fruit}    0.005693950 0.1508079 0.056634469 1
## [1267] {citrus fruit,     => {root vegetables} 0.005693950 0.4684685 0.022572445 1
##      tropical fruit}       => {whole milk}     0.005693950 0.3180428 0.033248602 1
## [1268] {citrus fruit,

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##      root vegetables} => {tropical fruit} 0.005693950 0.3218391 0.017691917 3
## [1269] {root vegetables, => {citrus fruit} 0.005693950 0.2705314 0.021047280 3
##          tropical fruit} => {yogurt} 0.006304016 0.3163265 0.019928826 2
## [1270] {citrus fruit, => {tropical fruit} 0.006304016 0.2910798 0.021657346 2
##          tropical fruit} => {citrus fruit} 0.006304016 0.2152778 0.029283172 2
## [1271] {citrus fruit, => {other vegetables} 0.009049314 0.4540816 0.019928826 2
##          yogurt} => {tropical fruit} 0.009049314 0.3133803 0.028876462 2
## [1272] {tropical fruit, => {citrus fruit} 0.009049314 0.2521246 0.035892222 3
##          yogurt} => {whole milk} 0.009049314 0.4540816 0.019928826 1
## [1273] {citrus fruit, => {tropical fruit} 0.009049314 0.2966667 0.030503305 2
##          tropical fruit} => {citrus fruit} 0.009049314 0.2139423 0.042297916 2
## [1274] {citrus fruit, => {other vegetables} 0.010371124 0.5862069 0.017691917 3
##          other vegetables} => {root vegetables} 0.010371124 0.3591549 0.028876462 3
## [1275] {other vegetables, => {citrus fruit} 0.010371124 0.2188841 0.047381800 2
##          tropical fruit} => {whole milk} 0.009150991 0.5172414 0.017691917 2
## [1276] {citrus fruit, => {root vegetables} 0.009150991 0.3000000 0.030503305 2
##          tropical fruit} => {citrus fruit} 0.009150991 0.1871102 0.048906965 2
## [1277] {citrus fruit, => {rolls/buns} 0.005795628 0.2676056 0.021657346 1
##          whole milk} => {yogurt} 0.005795628 0.3454545 0.016776817 2
## [1278] {tropical fruit, => {citrus fruit} 0.005795628 0.1686391 0.034367056 2
##          whole milk} => {root vegetables} 0.007625826 0.3521127 0.021657346 1
## [1279] {citrus fruit, => {other vegetables} 0.007625826 0.2640845 0.028876462 1
##          yogurt} => {yogurt} 0.007625826 0.1756440 0.043416370 2
## [1280] {other vegetables, => {citrus fruit} 0.007625826 0.4741784 0.021657346 1
##          yogurt} => {whole milk} 0.010269446 0.3366667 0.030503305 2
## [1281] {other vegetables, => {yogurt} 0.010269446 0.1833031 0.056024403 2
##          root vegetables} => {citrus fruit} 0.005998983 0.3575758 0.016776817 1
## [1282] {citrus fruit,
##          root vegetables}

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##      other vegetables}          => {rolls/buns}          0.005998983  0.2077465  0.028876462 1
## [1296] {other vegetables,    => {citrus fruit}        0.005998983  0.1408115  0.042602949 1
##      rolls/buns}              => {whole milk}         0.007219115  0.4303030  0.016776817 1
## [1297] {citrus fruit,       => {rolls/buns}         0.007219115  0.2366667  0.030503305 1
##      rolls/buns}              => {citrus fruit}        0.007219115  0.1274686  0.056634469 1
## [1298] {citrus fruit,       => {whole milk}         0.013014743  0.4507042  0.028876462 1
##      whole milk}              => {other vegetables} 0.013014743  0.4266667  0.030503305 2
## [1299] {rolls/buns,        => {citrus fruit}        0.013014743  0.1739130  0.074834774 2
##      whole milk}              => {whole milk}         0.005693950  0.3636364  0.015658363 2
## [1300] {citrus fruit,       => {other vegetables} 0.005693950  0.2314050  0.024605999 2
##      other vegetables}        => {sausage}           0.005693950  0.2343096  0.024300966 2
## [1301] {citrus fruit,       => {soda}               0.005693950  0.3831169  0.015658363 2
##      whole milk}              => {sausage}           0.005998983  0.3072917  0.019522115 3
## [1302] {other vegetables,  => {shopping bags}      0.005998983  0.1960133  0.030604982 1
##      whole milk}              => {rolls/buns}         0.005388917  0.3441558  0.015658363 1
## [1303] {sausage,           => {sausage}            0.005388917  0.2324561  0.023182511 2
##      shopping bags}          => {shopping bags}     0.005388917  0.2000000  0.026944586 2
## [1304] {shopping bags,     => {other vegetables} 0.006609049  0.5158730  0.012811388 2
##      soda}                   => {sausage}            0.006609049  0.2850877  0.023182511 2
## [1305] {sausage,           => {shopping bags}     0.006609049  0.1394850  0.047381800 1
##      soda}                   => {root vegetables} 0.005287239  0.4126984  0.012811388 1
## [1306] {sausage,           => {root vegetables} 0.005287239  0.2157676  0.024504321 1
##      shopping bags}          => {whole milk}         0.005287239  0.1081081  0.048906965 1
## [1307] {rolls/buns,        => {shopping bags}     0.006304016  0.2561983  0.024605999 1
##      shopping bags}          => {rolls/buns}         0.006304016  0.3229167  0.019522115 1
## [1308] {rolls/buns,        => {soda}               0.006304016  0.1644562  0.038332486 1
##      sausage}                => {shopping bags}     0.005388917  0.2190083  0.024605999 1
## [1309] {sausage,           => {other vegetables} 0.005388917  0.2343096  0.024300966 2
##      shopping bags}          => {sausage}            0.005998983  0.3072917  0.019522115 3
## [1310] {other vegetables,  => {shopping bags}     0.005998983  0.1960133  0.030604982 1
##      shopping bags}          => {other vegetables} 0.005388917  0.3441558  0.015658363 1
## [1311] {other vegetables,  => {sausage}            0.005388917  0.2324561  0.023182511 2
##      sausage}                => {shopping bags}     0.005388917  0.2000000  0.026944586 2
## [1312] {root vegetables,   => {other vegetables} 0.006609049  0.5158730  0.012811388 2
##      shopping bags}          => {root vegetables} 0.006609049  0.2850877  0.023182511 2
## [1313] {other vegetables,  => {root vegetables} 0.006609049  0.1394850  0.047381800 1
##      shopping bags}          => {whole milk}         0.005287239  0.4126984  0.012811388 1
## [1314] {other vegetables,  => {shopping bags}     0.005287239  0.2157676  0.024504321 1
##      root vegetables}        => {sausage}            0.005287239  0.1081081  0.048906965 1
## [1315] {root vegetables,   => {root vegetables} 0.006609049  0.2561983  0.024605999 1
##      shopping bags}          => {whole milk}         0.005287239  0.3229167  0.019522115 1
## [1316] {shopping bags,     => {root vegetables} 0.006609049  0.1644562  0.038332486 1
##      whole milk}              => {rolls/buns}         0.005388917  0.2190083  0.024605999 1
## [1317] {root vegetables,   => {shopping bags}     0.005388917  0.2343096  0.024300966 2
##      whole milk}              => {other vegetables} 0.005388917  0.3072917  0.019522115 3
## [1318] {shopping bags,     => {rolls/buns}         0.006304016  0.2561983  0.024605999 1
##      soda}                   => {soda}               0.006304016  0.3229167  0.019522115 1
## [1319] {rolls/buns,        => {shopping bags}     0.006304016  0.1644562  0.038332486 1
##      shopping bags}          => {rolls/buns}         0.005388917  0.2190083  0.024605999 1
## [1320] {rolls/buns,        => {soda}               0.006304016  0.2561983  0.024605999 1
##      soda}                   => {shopping bags}     0.005388917  0.3229167  0.019522115 1
## [1321] {shopping bags,     => {other vegetables} 0.006304016  0.1644562  0.038332486 1
##      soda}                   => {other vegetables} 0.005388917  0.2190083  0.024605999 1
## [1322] {other vegetables,

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##      shopping bags}          => {soda}           0.005388917  0.2324561  0.023182511 1
## [1323] {other vegetables,   => {shopping bags} 0.005388917  0.1645963  0.032740214 1
##      soda}                  => {whole milk}    0.006812405  0.2768595  0.024605999 1
## [1324] {shopping bags,     => {soda}           0.006812405  0.2780083  0.024504321 1
##      soda}                  => {shopping bags} 0.006812405  0.1700508  0.040061007 1
## [1325] {shopping bags,     => {other vegetables} 0.005388917  0.3533333  0.015251652 1
##      whole milk}             => {yogurt}         0.005388917  0.2324561  0.023182511 1
## [1326] {soda,               => {shopping bags} 0.005388917  0.1241218  0.043416370 1
##      whole milk}             => {whole milk}    0.005287239  0.3466667  0.015251652 1
## [1327] {shopping bags,     => {yogurt}         0.005287239  0.2157676  0.024504321 1
##      yogurt}                => {shopping bags} 0.005287239  0.2708333  0.019522115 1
## [1328] {other vegetables,   => {other vegetables} 0.005287239  0.2280702  0.023182511 1
##      shopping bags}          => {rolls/buns}    0.005287239  0.1241050  0.042602949 1
## [1329] {other vegetables,   => {whole milk}    0.005287239  0.2708333  0.019522115 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}                => {rolls/buns}    0.005287239  0.3112033  0.024504321 1
## [1331] {shopping bags,     => {whole milk}    0.005287239  0.007625826  0.1019022  0.074834774 1
##      whole milk}              => {shopping bags} 0.005287239  0.2157676  0.024504321 1
## [1332] {rolls/buns,        => {whole milk}    0.005287239  0.007625826  0.005083884  0.4237288  0.011997966 2
##      shopping bags}          => {rolls/buns}    0.005287239  0.005083884  0.1886792  0.026944586 2
## [1333] {other vegetables,   => {other vegetables} 0.005287239  0.005083884  0.005998983  0.4306569  0.013929842 2
##      shopping bags}          => {bottled water}  0.005287239  0.005998983  0.005998983  0.2226415  0.026944586 2
## [1334] {other vegetables,   => {sausage}        0.005287239  0.005998983  0.005998983  0.1671388  0.035892222 1
##      rolls/buns}              => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.5182482  0.013929842 2
## [1335] {rolls/buns,        => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.2414966  0.029893238 2
##      shopping bags}          => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1336] {shopping bags,     => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      whole milk}              => {other vegetables} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1337] {other vegetables,   => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      shopping bags}          => {rolls/buns}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1338] {shopping bags,     => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      whole milk}              => {other vegetables} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1339] {other vegetables,   => {shopping bags} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      whole milk}              => {other vegetables} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1340] {bottled water,      => {other vegetables} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      sausage}                => {bottled water}  0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1341] {other vegetables,   => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      sausage}                => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1342] {bottled water,      => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      other vegetables}       => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1343] {sausage,            => {other vegetables} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      tropical fruit}         => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1344] {other vegetables,   => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      sausage}                => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1345] {other vegetables,   => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      tropical fruit}         => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1346] {sausage,            => {whole milk}    0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      tropical fruit}         => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1347] {sausage,            => {tropical fruit} 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      whole milk}              => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1348] {tropical fruit,     => {sausage}        0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
##      whole milk}              => {root vegetables}, 0.005287239  0.005998983  0.005998983  0.007219115  0.1706731  0.042297916 1
## [1349] {root vegetables,

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##      sausage}          => {yogurt}          0.005185562  0.3469388  0.014946619  2
## [1350] {sausage,        => {root vegetables} 0.005185562  0.2642487  0.019623793  2
##      yogurt}          => {sausage}          0.005185562  0.2007874  0.025826131  2
## [1351] {root vegetables,=> {other vegetables} 0.006812405  0.4557823  0.014946619  2
##      yogurt}          => {root vegetables} 0.006812405  0.2528302  0.026944586  2
## [1352] {root vegetables,=> {sausage}          0.006812405  0.1437768  0.047381800  1
##      sausage}          => {other vegetables} 0.006812405  0.5170068  0.014946619  2
## [1353] {other vegetables,=> {root vegetables} 0.006812405  0.2585034  0.029893238  2
##      sausage}          => {whole milk}         0.006812405  0.1580042  0.048906965  1
## [1354] {other vegetables,=> {root vegetables} 0.006812405  0.2849741  0.019623793  1
##      root vegetables}   => {sausage}          0.006812405  0.005592272  0.2301255  0.024300966  1
## [1355] {root vegetables,=> {whole milk}         0.006812405  0.005592272  0.2849741  0.019623793  1
##      sausage}          => {root vegetables} 0.006812405  0.005592272  0.2849741  0.019623793  1
## [1356] {sausage,        => {whole milk}         0.006812405  0.005592272  0.2849741  0.019623793  1
##      whole milk}        => {root vegetables} 0.006812405  0.005592272  0.2849741  0.019623793  1
## [1357] {root vegetables,=> {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      whole milk}        => {yogurt}           0.006812405  0.005592272  0.2849741  0.019623793  1
## [1358] {sausage,        => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1359] {sausage,        => {yogurt}            0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
## [1360] {soda,           => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {rolls/buns}        0.006812405  0.005592272  0.2849741  0.019623793  1
## [1361] {sausage,        => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {rolls/buns}        0.006812405  0.005592272  0.2849741  0.019623793  1
## [1362] {rolls/buns,     => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      sausage}            => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
## [1363] {rolls/buns,     => {rolls/buns}        0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1364] {sausage,        => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {other vegetables} 0.006812405  0.005592272  0.2849741  0.019623793  1
## [1365] {other vegetables,=> {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      sausage}            => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1366] {other vegetables,=> {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1367] {sausage,        => {whole milk}        0.006812405  0.005592272  0.2849741  0.019623793  1
##      soda}               => {rolls/buns}        0.006812405  0.005592272  0.2849741  0.019623793  1
## [1368] {sausage,        => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
##      whole milk}         => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1369] {soda,           => {whole milk}        0.006812405  0.005592272  0.2849741  0.019623793  1
##      whole milk}         => {soda}              0.006812405  0.005592272  0.2849741  0.019623793  1
## [1370] {sausage,        => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {rolls/buns}        0.006812405  0.005592272  0.2849741  0.019623793  1
## [1371] {rolls/buns,     => {yogurt}            0.006812405  0.005592272  0.2849741  0.019623793  1
##      sausage}            => {yogurt}           0.006812405  0.005592272  0.2849741  0.019623793  1
## [1372] {rolls/buns,     => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {other vegetables} 0.006812405  0.005592272  0.2849741  0.019623793  1
## [1373] {sausage,        => {yogurt}            0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {other vegetables} 0.006812405  0.005592272  0.2849741  0.019623793  1
## [1374] {other vegetables,=> {yogurt}            0.006812405  0.005592272  0.2849741  0.019623793  1
##      sausage}            => {yogurt}           0.006812405  0.005592272  0.2849741  0.019623793  1
## [1375] {other vegetables,=> {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
##      yogurt}             => {sausage}          0.006812405  0.005592272  0.2849741  0.019623793  1
## [1376] {sausage,

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##      yogurt} => {whole milk} 0.008744281 0.4455959 0.019623793 1
## [1377] {sausage, => {yogurt} 0.008744281 0.2925170 0.029893238 2
##      whole milk} => {sausage} 0.008744281 0.1560799 0.056024403 1
## [1378] {whole milk, => {other vegetables} 0.008845958 0.2890365 0.030604982 1
##      yogurt} => {rolls/buns} 0.008845958 0.3283019 0.026944586 1
## [1379] {rolls/buns, => {sausage} 0.008845958 0.2076372 0.042602949 2
##      sausage} => {whole milk} 0.009354347 0.3056478 0.030604982 1
## [1380] {other vegetables, => {rolls/buns} 0.009354347 0.3129252 0.029893238 1
##      sausage} => {sausage} 0.009354347 0.1651706 0.056634469 1
## [1381] {other vegetables, => {whole milk} 0.010167768 0.3773585 0.026944586 1
##      rolls/buns} => {rolls/buns} 0.010167768 0.3401361 0.029893238 1
## [1382] {rolls/buns, => {sausage} 0.010167768 0.1358696 0.074834774 1
##      sausage} => {whole milk} 0.010167768 0.2802198 0.018505338 1
## [1383] {sausage, => {rolls/buns} 0.010167768 0.1789474 0.028978139 1
##      whole milk} => {sausage} 0.005185562 0.2487805 0.020843925 2
## [1384] {rolls/buns, => {whole milk} 0.005185562 0.007117438 0.3846154 0.018505338 2
##      whole milk} => {other vegetables} 0.005185562 0.2226891 0.024199288 2
## [1385] {other vegetables, => {sausage} 0.005185562 0.007117438 0.3097345 0.022979156 2
##      sausage} => {tropical fruit} 0.005185562 0.2190083 0.024605999 1
## [1386] {sausage, => {tropical fruit} 0.005185562 0.006202339 0.3351648 0.018505338 1
##      whole milk} => {bottled water} 0.005185562 0.006202339 0.2500000 0.024809354 2
## [1387] {other vegetables, => {tropical fruit} 0.005185562 0.006202339 0.1728045 0.035892222 1
##      whole milk} => {yogurt} 0.005185562 0.008032537 0.4340659 0.018505338 1
## [1388] {bottled water, => {soda} 0.005185562 0.008032537 0.2337278 0.034367056 2
##      tropical fruit} => {tropical fruit} 0.005185562 0.008032537 0.1899038 0.042297916 1
## [1389] {bottled water, => {bottled water} 0.005185562 0.008032537 0.008744281 0.4455959 0.019623793 1
##      soda} => {yogurt} 0.005185562 0.008032537 0.008744281 0.2925170 0.029893238 2
## [1390] {soda, => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.1560799 0.056024403 1
##      tropical fruit} => {bottled water} 0.005185562 0.008032537 0.008744281 0.1651706 0.056634469 1
## [1391] {bottled water, => {yogurt} 0.005185562 0.008032537 0.008744281 0.3773585 0.026944586 1
##      tropical fruit} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.2802198 0.018505338 1
## [1392] {bottled water, => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.3401361 0.029893238 1
##      yogurt} => {bottled water} 0.005185562 0.008032537 0.008744281 0.1358696 0.074834774 1
## [1393] {tropical fruit, => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.2190083 0.024605999 1
##      yogurt} => {bottled water} 0.005185562 0.008032537 0.008744281 0.2226891 0.024199288 2
## [1394] {bottled water, => {rolls/buns} 0.005185562 0.008032537 0.008744281 0.1651706 0.056634469 1
##      tropical fruit} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.1789474 0.028978139 1
## [1395] {bottled water, => {rolls/buns} 0.005185562 0.008032537 0.008744281 0.1899038 0.042297916 1
##      rolls/buns} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.2925170 0.029893238 2
## [1396] {rolls/buns, => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.3097345 0.022979156 2
##      tropical fruit} => {bottled water} 0.005185562 0.008032537 0.008744281 0.3351648 0.018505338 1
## [1397] {bottled water, => {other vegetables} 0.005185562 0.008032537 0.008744281 0.3846154 0.018505338 2
##      tropical fruit} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.4340659 0.018505338 1
## [1398] {bottled water, => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.2487805 0.020843925 2
##      other vegetables} => {bottled water} 0.005185562 0.008032537 0.008744281 0.2226891 0.024199288 1
## [1399] {other vegetables, => {bottled water} 0.005185562 0.008032537 0.008744281 0.2190083 0.024605999 1
##      tropical fruit} => {yogurt} 0.005185562 0.008032537 0.008744281 0.1789474 0.028978139 1
## [1400] {bottled water, => {whole milk} 0.005185562 0.008032537 0.008744281 0.1651706 0.056634469 1
##      tropical fruit} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.1358696 0.074834774 1
## [1401] {bottled water, => {whole milk} 0.005185562 0.008032537 0.008744281 0.2925170 0.029893238 2
##      whole milk} => {tropical fruit} 0.005185562 0.008032537 0.008744281 0.2487805 0.020843925 1
## [1402] {tropical fruit, => {whole milk} 0.005185562 0.008032537 0.008744281 0.1899038 0.042297916 1
##      whole milk} => {bottled water} 0.005185562 0.008032537 0.008744281 0.1728045 0.035892222 1
## [1403] {bottled water,

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## [1404] {bottled water,	=> {root vegetables}	0.007015760	0.4480519	0.015658363	2
## [1405] {other vegetables,	=> {root vegetables}	0.007015760	0.2827869	0.024809354	2
## [1406] {bottled water,	=> {bottled water}	0.007015760	0.1480687	0.047381800	1
## [1407] {bottled water,	=> {whole milk}	0.007320793	0.4675325	0.015658363	1
## [1408] {root vegetables,	=> {root vegetables}	0.007320793	0.2130178	0.034367056	1
## [1409] {bottled water,	=> {bottled water}	0.007320793	0.1496881	0.048906965	1
## [1410] {soda}	=> {yogurt}	0.007422471	0.2561404	0.028978139	1
## [1411] {bottled water,	=> {soda}	0.007422471	0.3230088	0.022979156	1
## [1412] {bottled water,	=> {bottled water}	0.007422471	0.2713755	0.027351296	2
## [1413] {soda}	=> {rolls/buns}	0.006812405	0.2350877	0.028978139	1
## [1414] {rolls/buns,	=> {soda}	0.006812405	0.2815126	0.024199288	1
## [1415] {soda}	=> {bottled water}	0.006812405	0.1777188	0.038332486	1
## [1416] {bottled water,	=> {other vegetables}	0.005693950	0.1964912	0.028978139	1
## [1417] {other vegetables,	=> {soda}	0.005693950	0.2295082	0.024809354	1
## [1418] {soda}	=> {bottled water}	0.005693950	0.1739130	0.032740214	1
## [1419] {bottled water,	=> {whole milk}	0.007524148	0.2596491	0.028978139	1
## [1420] {soda,	=> {soda}	0.007524148	0.2189349	0.034367056	1
## [1421] {whole milk}	=> {bottled water}	0.007524148	0.1878173	0.040061007	1
## [1422] {bottled water,	=> {rolls/buns}	0.007117438	0.3097345	0.022979156	1
## [1423] {rolls/buns,	=> {yogurt}	0.007117438	0.2941176	0.024199288	2
## [1424] {yogurt}	=> {bottled water}	0.007117438	0.2071006	0.034367056	1
## [1425] {bottled water,	=> {other vegetables}	0.008134215	0.3539823	0.022979156	1
## [1426] {other vegetables,	=> {yogurt}	0.008134215	0.3278689	0.024809354	2
## [1427] {yogurt}	=> {bottled water}	0.008134215	0.1873536	0.043416370	1
## [1428] {bottled water,	=> {whole milk}	0.009659380	0.4203540	0.022979156	1
## [1429] {whole milk,	=> {yogurt}	0.009659380	0.2810651	0.034367056	2
## [1430] {yogurt}	=> {bottled water}	0.009659380	0.1724138	0.056024403	1

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##      rolls/buns}          => {other vegetables}    0.007320793  0.3025210 0.024199288 1
## [1431] {bottled water,    => {rolls/buns}        0.007320793  0.2950820 0.024809354 1
##          other vegetables}=> {bottled water}       0.007320793  0.1718377 0.042602949 1
## [1432] {other vegetables,=> {whole milk}         0.008744281  0.3613445 0.024199288 1
##          rolls/buns}        => {rolls/buns}        0.008744281  0.2544379 0.034367056 1
## [1433] {bottled water,    => {whole milk}         0.008744281  0.1543986 0.056634469 1
##          rolls/buns}        => {bottled water}       0.008744281  0.4344262 0.024809354 1
## [1434] {bottled water,    => {other vegetables}    0.010777834  0.3136095 0.034367056 1
##          whole milk}        => {whole milk}         0.010777834  0.1440217 0.074834774 1
## [1435] {rolls/buns,      => {bottled water}       0.010777834  0.2777778 0.029283172 2
##          whole milk}        => {other vegetables}  0.008134215  0.3864734 0.021047280 2
## [1436] {bottled water,    => {whole milk}         0.008134215  0.3149606 0.025826131 3
##          other vegetables}  => {tropical fruit}      0.008134215  0.2396694 0.024605999 2
## [1437] {bottled water,    => {rolls/buns}        0.005897306  0.2801932 0.021047280 1
##          whole milk}        => {root vegetables}   0.005897306  0.2426778 0.024300966 2
## [1438] {other vegetables,=> {tropical fruit}      0.005897306  0.012302999 0.5845411 0.021047280 3
##          whole milk}        => {other vegetables}  0.005897306  0.3427762 0.035892222 3
## [1439] {root vegetables,=> {rolls/buns}        0.005897306  0.012302999 0.2596567 0.047381800 2
##          tropical fruit}     => {root vegetables}   0.005897306  0.011997966 0.5700483 0.021047280 2
## [1440] {tropical fruit,  => {tropical fruit}      0.005897306  0.011997966 0.2836538 0.042297916 2
##          yogurt}            => {whole milk}         0.005897306  0.011997966 0.2453222 0.048906965 2
## [1441] {root vegetables,=> {tropical fruit}      0.005897306  0.006609049 0.3170732 0.020843925 2
##          yogurt}            => {root vegetables}   0.005897306  0.006609049 0.2256944 0.029283172 1
## [1442] {root vegetables,=> {rolls/buns}        0.005897306  0.006609049 0.2416357 0.027351296 2
##          tropical fruit}     => {tropical fruit}      0.005897306  0.005388917 0.2585366 0.020843925 1
## [1443] {rolls/buns,      => {rolls/buns}        0.005897306  0.005388917 0.2190083 0.024605999 1
##          tropical fruit}     => {soda}              0.005897306  0.005388917 0.1405836 0.038332486 1
## [1444] {rolls/buns,      => {root vegetables}   0.005897306  0.005388917 0.012302999 0.1405836 0.038332486 1
##          root vegetables}   => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1445] {root vegetables,=> {root vegetables}   0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1446] {other vegetables,=> {root vegetables}   0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1447] {other vegetables,=> {root vegetables}   0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          root vegetables}   => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1448] {root vegetables,=> {root vegetables}   0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1449] {tropical fruit,  => {whole milk}         0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          whole milk}        => {root vegetables}   0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1450] {root vegetables,=> {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          whole milk}        => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1451] {soda,              => {yogurt}           0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {soda}             0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1452] {tropical fruit,  => {soda}             0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          yogurt}            => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1453] {soda,              => {tropical fruit}     0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          yogurt}            => {rolls/buns}        0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1454] {soda,              => {rolls/buns}        0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {soda}             0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1455] {rolls/buns,      => {soda}             0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          tropical fruit}     => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1456] {rolls/buns,      => {soda}             0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
##          soda}               => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1
## [1457] {soda,              => {tropical fruit}      0.005897306  0.005388917 0.011997966 0.1405836 0.038332486 1

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##      tropical fruit} => {other vegetables} 0.007219115 0.3463415 0.020843925 1
## [1458] {other vegetables, => {soda} 0.007219115 0.2011331 0.035892222 1
##      tropical fruit} => {tropical fruit} 0.007219115 0.2204969 0.032740214 2
## [1459] {other vegetables, => {whole milk} 0.007829181 0.3756098 0.020843925 1
##      soda} => {soda} 0.007829181 0.1850962 0.042297916 1
## [1460] {soda, => {tropical fruit} 0.007829181 0.1954315 0.040061007 1
##      tropical fruit} => {whole milk} 0.008744281 0.2986111 0.029283172 1
## [1461] {tropical fruit, => {tropical fruit} 0.008744281 0.3553719 0.024605999 2
##      whole milk} => {rolls/buns} 0.008744281 0.2544379 0.034367056 2
## [1462] {soda, => {yogurt} 0.012302999 0.4201389 0.029283172 2
##      whole milk} => {tropical fruit} 0.012302999 0.3427762 0.035892222 2
## [1463] {tropical fruit, => {other vegetables} 0.012302999 0.2833724 0.043416370 2
##      yogurt} => {yogurt} 0.015149975 0.5173611 0.029283172 2
## [1464] {rolls/buns, => {tropical fruit} 0.015149975 0.3581731 0.042297916 2
##      tropical fruit} => {whole milk} 0.015149975 0.2704174 0.056024403 2
## [1465] {rolls/buns, => {yogurt} 0.007829181 0.3181818 0.024605999 1
##      yogurt} => {tropical fruit} 0.007829181 0.2181303 0.035892222 1
## [1466] {tropical fruit, => {other vegetables} 0.007829181 0.1837709 0.042602949 1
##      yogurt} => {rolls/buns} 0.010981190 0.4462810 0.024605999 1
## [1467] {other vegetables, => {tropical fruit} 0.010981190 0.2596154 0.042297916 1
##      tropical fruit} => {whole milk} 0.010981190 0.1938959 0.056634469 1
## [1468] {other vegetables, => {whole milk} 0.017081851 0.4759207 0.035892222 1
##      yogurt} => {other vegetables} 0.017081851 0.4038462 0.042297916 2
## [1469] {tropical fruit, => {tropical fruit} 0.017081851 0.2282609 0.074834774 2
##      yogurt} => {other vegetables} 0.008235892 0.4426230 0.018607016 2
## [1470] {tropical fruit, => {soda} 0.008235892 0.1738197 0.047381800 0
##      whole milk} => {root vegetables} 0.008235892 0.2515528 0.032740214 2
## [1471] {whole milk, => {tropical fruit} 0.012302999 0.3427762 0.035892222 2
##      yogurt} => {other vegetables} 0.012302999 0.2833724 0.043416370 2
## [1472] {rolls/buns, => {yogurt} 0.015149975 0.5173611 0.029283172 2
##      tropical fruit} => {whole milk} 0.015149975 0.3581731 0.042297916 2
## [1473] {other vegetables, => {tropical fruit} 0.015149975 0.2704174 0.056024403 2
##      tropical fruit} => {rolls/buns} 0.007829181 0.3181818 0.024605999 1
## [1474] {other vegetables, => {whole milk} 0.007829181 0.2181303 0.035892222 1
##      rolls/buns} => {yogurt} 0.007829181 0.1837709 0.042602949 1
## [1475] {rolls/buns, => {tropical fruit} 0.007829181 0.15149975 0.035892222 1
##      tropical fruit} => {whole milk} 0.010981190 0.4462810 0.024605999 1
## [1476] {tropical fruit, => {rolls/buns} 0.010981190 0.2596154 0.042297916 1
##      whole milk} => {tropical fruit} 0.007829181 0.1938959 0.056634469 1
## [1477] {rolls/buns, => {whole milk} 0.010981190 0.15149975 0.035892222 1
##      whole milk} => {tropical fruit} 0.007829181 0.12302999 0.029283172 1
## [1478] {other vegetables, => {whole milk} 0.010981190 0.074834774 2
##      tropical fruit} => {other vegetables} 0.017081851 0.4038462 0.042297916 2
## [1479] {tropical fruit, => {soda} 0.017081851 0.042297916 2
##      whole milk} => {tropical fruit} 0.008235892 0.4426230 0.018607016 2
## [1480] {other vegetables, => {soda} 0.008235892 0.1738197 0.047381800 0
##      whole milk} => {root vegetables} 0.008235892 0.2515528 0.032740214 2
## [1481] {root vegetables, => {soda} 0.008235892 0.12302999 0.029283172 1
##      soda} => {tropical fruit} 0.008235892 0.09090909 0.024605999 1
## [1482] {other vegetables, => {root vegetables} 0.008235892 0.05050505 0.029283172 1
##      root vegetables} => {soda} 0.008235892 0.01738197 0.047381800 0
## [1483] {other vegetables, => {soda} 0.008235892 0.01738197 0.047381800 0
##      soda} => {root vegetables} 0.008235892 0.008235892 0.032740214 2
## [1484] {root vegetables,

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##      soda}          => {whole milk}          0.008134215 0.4371585 0.018607016 1
## [1485] {root vegetables, => {soda}              0.008134215 0.1663202 0.048906965 0
##           whole milk}          => {root vegetables} 0.008134215 0.2030457 0.040061007 1
## [1486] {soda,          => {rolls/buns}        0.007219115 0.2795276 0.025826131 1
##           whole milk}          => {yogurt}            0.007219115 0.2970711 0.024300966 2
## [1487] {root vegetables, => {root vegetables} 0.007219115 0.2100592 0.034367056 1
##           yogurt}             => {other vegetables} 0.012913066 0.5000000 0.025826131 2
## [1488] {rolls/buns,       => {yogurt}            0.012913066 0.2725322 0.047381800 1
##           root vegetables}    => {root vegetables} 0.012913066 0.2974239 0.043416370 2
## [1489] {rolls/buns,       => {whole milk}          0.014539908 0.5629921 0.025826131 2
##           yogurt}             => {yogurt}             0.014539908 0.2972973 0.048906965 2
## [1490] {root vegetables, => {root vegetables} 0.014539908 0.2595281 0.056024403 2
##           yogurt}             => {other vegetables} 0.012201322 0.5020921 0.024300966 2
## [1491] {other vegetables,=> {rolls/buns}        0.012201322 0.2575107 0.047381800 1
##           root vegetables}   => {root vegetables} 0.012201322 0.2863962 0.042602949 2
## [1492] {other vegetables,=> {whole milk}          0.012709710 0.5230126 0.024300966 2
##           yogurt}             => {yogurt}             0.012709710 0.2598753 0.048906965 1
## [1493] {root vegetables,=> {root vegetables} 0.012709710 0.2244165 0.056634469 2
##           yogurt}             => {whole milk}          0.023182511 0.4892704 0.047381800 1
## [1494] {root vegetables,=> {other vegetables} 0.023182511 0.4740125 0.048906965 2
##           whole milk}          => {root vegetables} 0.023182511 0.3097826 0.074834774 2
## [1495] {whole milk,        => {rolls/buns}        0.008642603 0.3159851 0.027351296 1
##           yogurt}             => {yogurt}             0.008642603 0.2254642 0.038332486 1
## [1496] {rolls/buns,       => {soda}              0.008642603 0.2514793 0.034367056 1
##           root vegetables}   => {other vegetables} 0.008337570 0.3048327 0.027351296 1
## [1497] {other vegetables,=> {yogurt}            0.008337570 0.2546584 0.032740214 1
##           root vegetables}   => {soda}              0.008337570 0.1920375 0.043416370 1
## [1498] {other vegetables,=> {rolls/buns}        0.008337570 0.2972973 0.048906965 2
##           rolls/buns}          => {root vegetables} 0.012201322 0.2575107 0.047381800 1
## [1499] {rolls/buns,       => {whole milk}          0.012201322 0.2863962 0.042602949 2
##           root vegetables}   => {yogurt}             0.012201322 0.2244165 0.056634469 2
## [1500] {root vegetables,=> {root vegetables} 0.012201322 0.2598753 0.048906965 1
##           whole milk}          => {whole milk}          0.012709710 0.5230126 0.024300966 2
## [1501] {rolls/buns,       => {rolls/buns}        0.012709710 0.2598753 0.048906965 1
##           whole milk}          => {root vegetables} 0.012709710 0.2244165 0.056634469 2
## [1502] {other vegetables,=> {whole milk}          0.012709710 0.4892704 0.047381800 1
##           root vegetables}   => {other vegetables} 0.023182511 0.4740125 0.048906965 2
## [1503] {root vegetables,=> {whole milk}          0.023182511 0.4740125 0.048906965 2
##           whole milk}          => {root vegetables} 0.023182511 0.3097826 0.074834774 2
## [1504] {other vegetables,=> {whole milk}          0.023182511 0.3097826 0.074834774 2
##           whole milk}          => {rolls/buns}        0.008642603 0.3159851 0.027351296 1
## [1505] {soda,          => {yogurt}             0.008642603 0.2254642 0.038332486 1
##           yogurt}             => {rolls/buns}        0.008642603 0.2514793 0.034367056 1
## [1506] {rolls/buns,       => {soda}              0.008642603 0.2514793 0.034367056 1
##           soda}                => {yogurt}            0.008642603 0.3048327 0.027351296 1
## [1507] {rolls/buns,       => {soda}              0.008642603 0.2546584 0.032740214 1
##           yogurt}             => {yogurt}            0.008642603 0.1920375 0.043416370 1
## [1508] {soda,          => {other vegetables} 0.008642603 0.2546584 0.032740214 1
##           yogurt}             => {soda}              0.008642603 0.3048327 0.027351296 1
## [1509] {other vegetables,=> {yogurt}            0.008642603 0.2546584 0.032740214 1
##           soda}                => {yogurt}            0.008337570 0.1920375 0.043416370 1
## [1510] {other vegetables,=> {soda}              0.008337570 0.2546584 0.032740214 1
##           yogurt}             => {soda}              0.008337570 0.3048327 0.027351296 1
## [1511] {soda,

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##      yogurt}          => {whole milk}          0.010472801  0.3828996 0.027351296 1
## [1512] {soda,           => {yogurt}            0.010472801  0.2614213 0.040061007 1
##      whole milk}        => {soda}              0.010472801  0.1869328 0.056024403 1
## [1513] {whole milk,    => {other vegetables} 0.009862735  0.2572944 0.038332486 1
##      yogurt}           => {rolls/buns}       0.009862735  0.3012422 0.032740214 1
## [1514] {rolls/buns,   => {soda}              0.009862735  0.2315036 0.042602949 1
##      soda}              => {whole milk}       0.008845958  0.2307692 0.038332486 0
## [1515] {other vegetables,=> {rolls/buns}       0.008845958  0.2208122 0.040061007 1
##      soda}              => {soda}              0.008845958  0.1561939 0.056634469 0
## [1516] {other vegetables,=> {whole milk}       0.013929842  0.4254658 0.032740214 1
##      rolls/buns}         => {other vegetables} 0.013929842  0.3477157 0.040061007 1
## [1517] {rolls/buns,    => {soda}              0.013929842  0.1861413 0.074834774 1
##      soda}              => {whole milk}       0.011489578  0.3343195 0.034367056 1
## [1518] {soda,           => {rolls/buns}       0.011489578  0.2646370 0.043416370 1
##      whole milk}         => {other vegetables} 0.011489578  0.2696897 0.042602949 1
## [1519] {rolls/buns,    => {whole milk}       0.015556685  0.4526627 0.034367056 1
##      whole milk}         => {other vegetables} 0.015556685  0.2776770 0.056024403 1
## [1520] {other vegetables,=> {rolls/buns}       0.015556685  0.2746858 0.056634469 1
##      soda}              => {yogurt}            0.022267412  0.5128806 0.043416370 2
## [1521] {soda,           => {whole milk}       0.022267412  0.3974592 0.056024403 2
##      whole milk}         => {other vegetables} 0.022267412  0.2975543 0.074834774 2
## [1522] {other vegetables,=> {yogurt}            0.017895272  0.4200477 0.042602949 1
##      whole milk}         => {whole milk}       0.017895272  0.3159785 0.056634469 1
## [1523] {rolls/buns,    => {other vegetables} 0.017895272  0.2391304 0.074834774 1
##      yogurt}             => {rolls/buns}       0.005083884  0.6172840 0.008235892 2
## [1524] {other vegetables,=> {whole milk}       0.005083884  0.5376344 0.009456024 2
##      yogurt}             => {other vegetables} 0.005083884  0.2208122 0.040061007 1
## [1525] {other vegetables,=> {whole milk}       0.015556685  0.4526627 0.034367056 1
##      rolls/buns}          => {rolls/buns}       0.015556685  0.2776770 0.056024403 1
## [1526] {rolls/buns,    => {yogurt}            0.015556685  0.2696897 0.042602949 1
##      yogurt}             => {whole milk}       0.011489578  0.2646370 0.043416370 1
## [1527] {whole milk,    => {rolls/buns}       0.011489578  0.2746858 0.056634469 1
##      yogurt}             => {whole milk}       0.011489578  0.2696897 0.042602949 1
## [1528] {rolls/buns,    => {yogurt}            0.011489578  0.2646370 0.043416370 1
##      whole milk}          => {other vegetables} 0.011489578  0.2776770 0.056024403 1
## [1529] {other vegetables,=> {whole milk}       0.011489578  0.2746858 0.056634469 1
##      yogurt}             => {whole milk}       0.011489578  0.2696897 0.042602949 1
## [1530] {whole milk,    => {other vegetables} 0.011489578  0.2776770 0.056024403 1
##      yogurt}             => {whole milk}       0.011489578  0.2646370 0.043416370 1
## [1531] {other vegetables,=> {yogurt}            0.011489578  0.2696897 0.042602949 1
##      whole milk}          => {whole milk}       0.011489578  0.2776770 0.056024403 1
## [1532] {other vegetables,=> {whole milk}       0.011489578  0.2746858 0.056634469 1
##      rolls/buns}          => {other vegetables} 0.011489578  0.2646370 0.043416370 1
## [1533] {rolls/buns,    => {whole milk}       0.011489578  0.2776770 0.056024403 1
##      whole milk}          => {other vegetables} 0.011489578  0.2696897 0.042602949 1
## [1534] {other vegetables,=> {rolls/buns}       0.011489578  0.2776770 0.056024403 1
##      whole milk}          => {whole milk}       0.011489578  0.2646370 0.043416370 1
## [1535] {fruit/vegetable juice,=> {whole milk}       0.011489578  0.2776770 0.056024403 1
##      other vegetables,   => {other vegetables} 0.011489578  0.2696897 0.042602949 1
##      yogurt}              => {whole milk}       0.005083884  0.6172840 0.008235892 2
## [1536] {fruit/vegetable juice,=> {whole milk}       0.005083884  0.5376344 0.009456024 2
##      whole milk,          => {other vegetables} 0.005083884  0.2208122 0.040061007 1
##      yogurt}              => {other vegetables} 0.005083884  0.005083884 0.009456024 2
## [1537] {fruit/vegetable juice,

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##      other vegetables,
##      whole milk}          => {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

## NULL

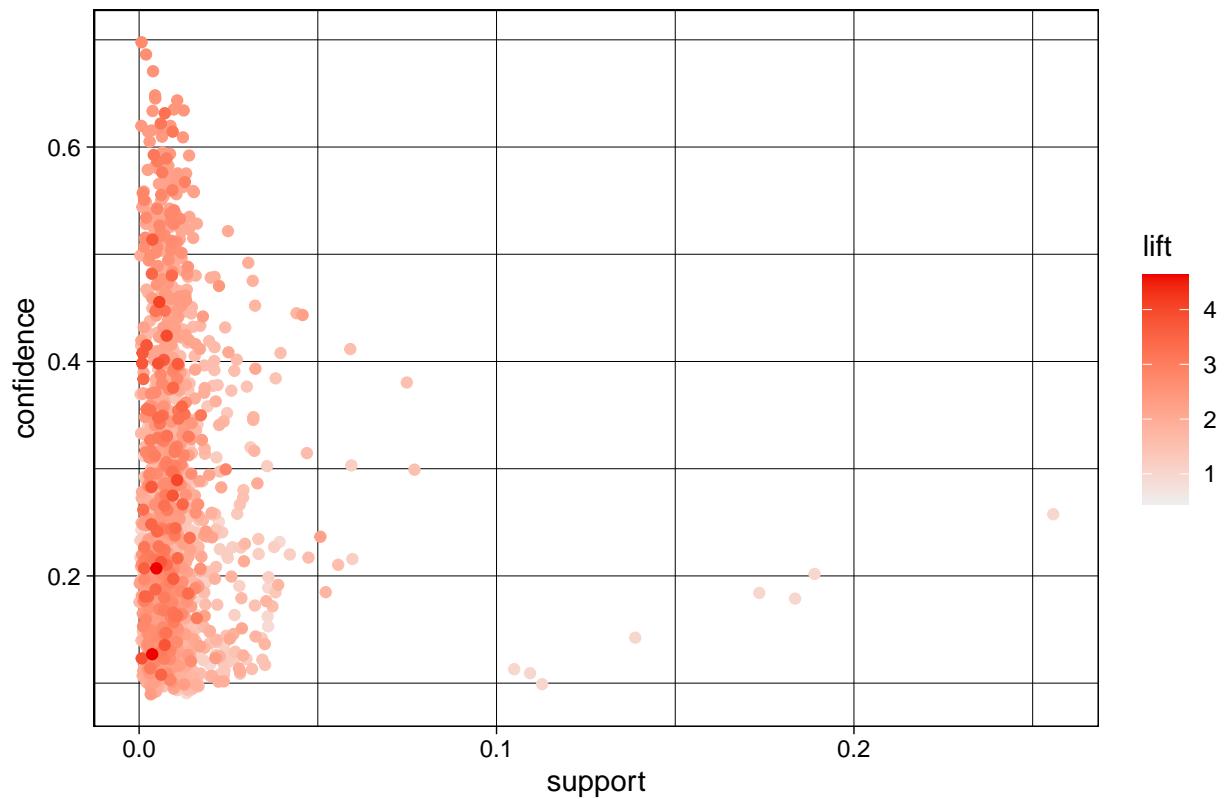
```

Inspection : There are almost 1582 associations with Min support of 0.005, min confidence of 0.1

Step 4 : Plotting the entire network

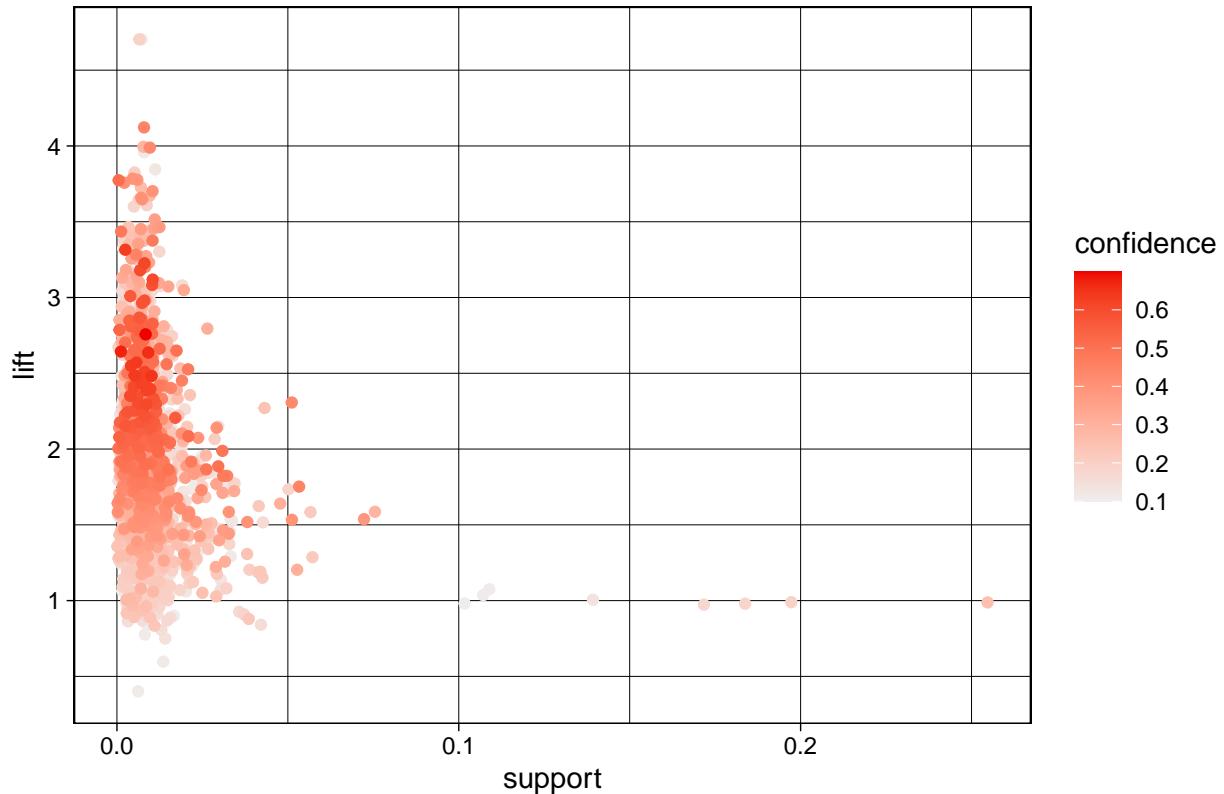
```
## To reduce overplotting, jitter is added! Use jitter = 0 to prevent jitter.
```

Scatter plot for 1582 rules



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

Scatter plot for 1582 rules



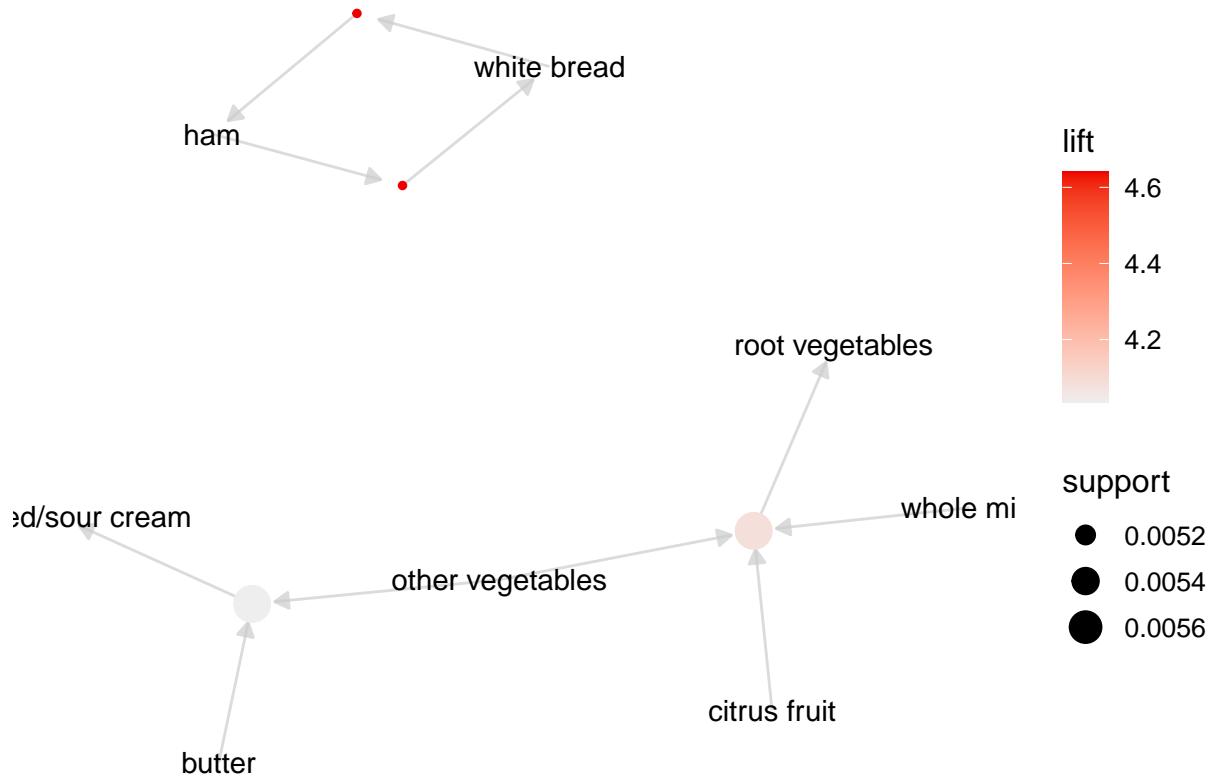
We see the plot of support against lift with confidence being the color scale. We also see support against confidence with lift as colour scale.

We will next look into subsets of data to derive more insights.

Step 5 : Inspection of certain subsets

- Inspect subset with lift > 4, support > 0.005 and confidence > 0.1

```
##      lhs                  rhs                  support  confidence  coverage    lift count
## [1] {ham}        => {white bread}  0.005083884  0.1953125 0.02602949 4.639851   50
## [2] {white bread} => {ham}       0.005083884  0.1207729 0.04209456 4.639851   50
## [3] {butter,
##      other vegetables} => {whipped/sour cream} 0.005795628  0.2893401 0.02003050 4.036397   57
## [4] {citrus fruit,
##      other vegetables,
##      whole milk}      => {root vegetables}  0.005795628  0.4453125 0.01301474 4.085493   57
```



We observe that white bread is frequently sold along with ham and gives a lift of 4.6 (also satisfies the support and confidence conditions) Whenever a customer has butter along with other vegetables, he would most probably purchase whipped/sour cream as well Although we have seen these observations, we see that the support here is quite low which means that they tend to happen very rarely.

As a next step, we will try and increase the support values while reducing the lift values

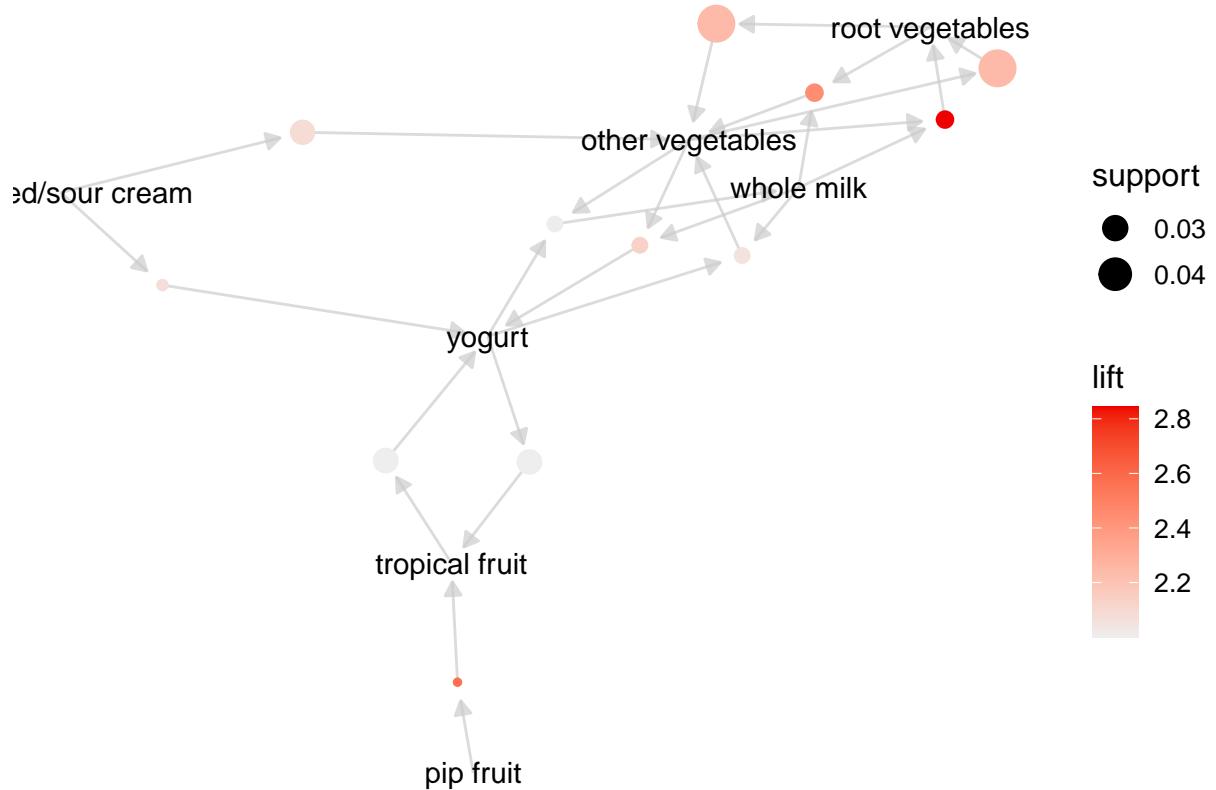
- Inspect subset with lift > 2, support > 0.002 and confidence > 0.2

```
##      lhs                      rhs          support    confidence
## [1] {whipped/sour cream} => {yogurt}      0.02074225 0.2893617
## [2] {whipped/sour cream} => {other vegetables} 0.02887646 0.4028369
## [3] {pip fruit}           => {tropical fruit} 0.02043721 0.2701613
## [4] {tropical fruit}      => {yogurt}        0.02928317 0.2790698
## [5] {yogurt}               => {tropical fruit} 0.02928317 0.2099125
## [6] {root vegetables}     => {other vegetables} 0.04738180 0.4347015
## [7] {other vegetables}    => {root vegetables} 0.04738180 0.2448765
## [8] {root vegetables,whole milk} => {other vegetables} 0.02318251 0.4740125
## [9] {other vegetables,whole milk} => {root vegetables} 0.02318251 0.3097826
## [10] {other vegetables,yogurt}   => {whole milk}      0.02226741 0.5128806
## [11] {whole milk,yogurt}       => {other vegetables} 0.02226741 0.3974592
## [12] {other vegetables,whole milk} => {yogurt}        0.02226741 0.2975543
##      coverage    lift    count
## [1] 0.07168277 2.074251 204
## [2] 0.07168277 2.081924 284
## [3] 0.07564820 2.574648 201
## [4] 0.10493137 2.000475 288
```

```

## [5] 0.13950178 2.000475 288
## [6] 0.10899847 2.246605 466
## [7] 0.19349263 2.246605 466
## [8] 0.04890696 2.449770 228
## [9] 0.07483477 2.842082 228
## [10] 0.04341637 2.007235 219
## [11] 0.05602440 2.054131 219
## [12] 0.07483477 2.132979 219

```



We observe that yogurt is sold along with whipped/sour cream, yogurt gets a lift of ~2 and they have a good support as well. The above conditions are satisfied by the following few conditions as well:

- Other vegetables are bought when whipped/sour cream is bought
- Tropical fruit is bought when pip fruit is bought
- yogurt and tropical fruit are bought in conjunction

We can also look at more subsets of data to draw further insights:

a) Napkin Association rule:

```

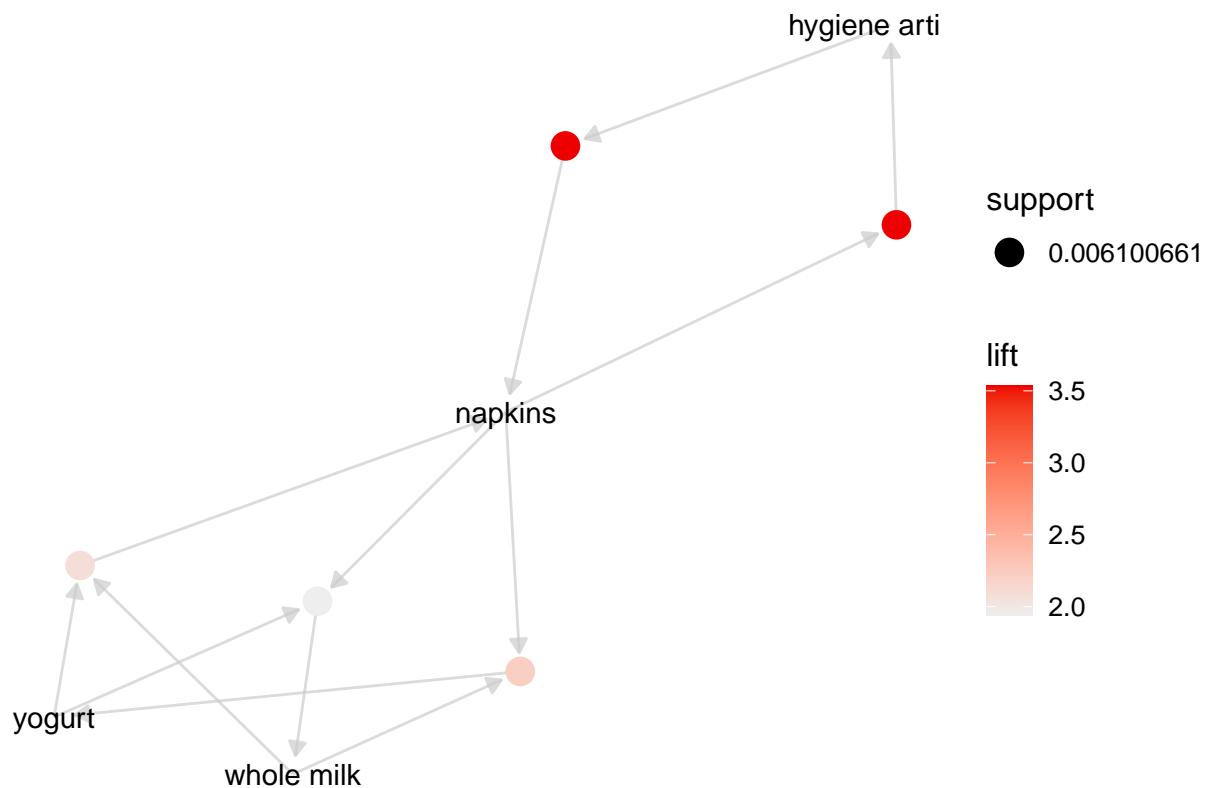
##      lhs                      rhs          support
## [1] {hygiene articles} => {napkins} 0.006100661
## [2] {napkins}           => {hygiene articles} 0.006100661
## [3] {napkins,whole milk} => {yogurt} 0.006100661
## [4] {whole milk,yogurt}  => {napkins} 0.006100661
## [5] {napkins,yogurt}    => {whole milk} 0.006100661
## [6] {whipped/sour cream}=> {napkins} 0.007219115
## [7] {napkins}           => {whipped/sour cream} 0.007219115
## [8] {napkins,other vegetables}=> {whole milk} 0.006812405

```

```

## [9] {napkins}          => {tropical fruit}      0.010066090
## [10] {napkins}         => {fruit/vegetable juice} 0.006914082
##   confidence coverage lift count
## [1] 0.1851852  0.03294357 3.536498 60
## [2] 0.1165049  0.05236401 3.536498 60
## [3] 0.3092784  0.01972547 2.217021 60
## [4] 0.1088929  0.05602440 2.079538 60
## [5] 0.4958678  0.01230300 1.940652 60
## [6] 0.1007092  0.07168277 1.923253 71
## [7] 0.1378641  0.05236401 1.923253 71
## [8] 0.4718310  0.01443823 1.846581 67
## [9] 0.1922330  0.05236401 1.831988 99
## [10] 0.1320388  0.05236401 1.826444 68

```



We see that napkins are highly associated with hygiene articles due to which the lift is very high.

```

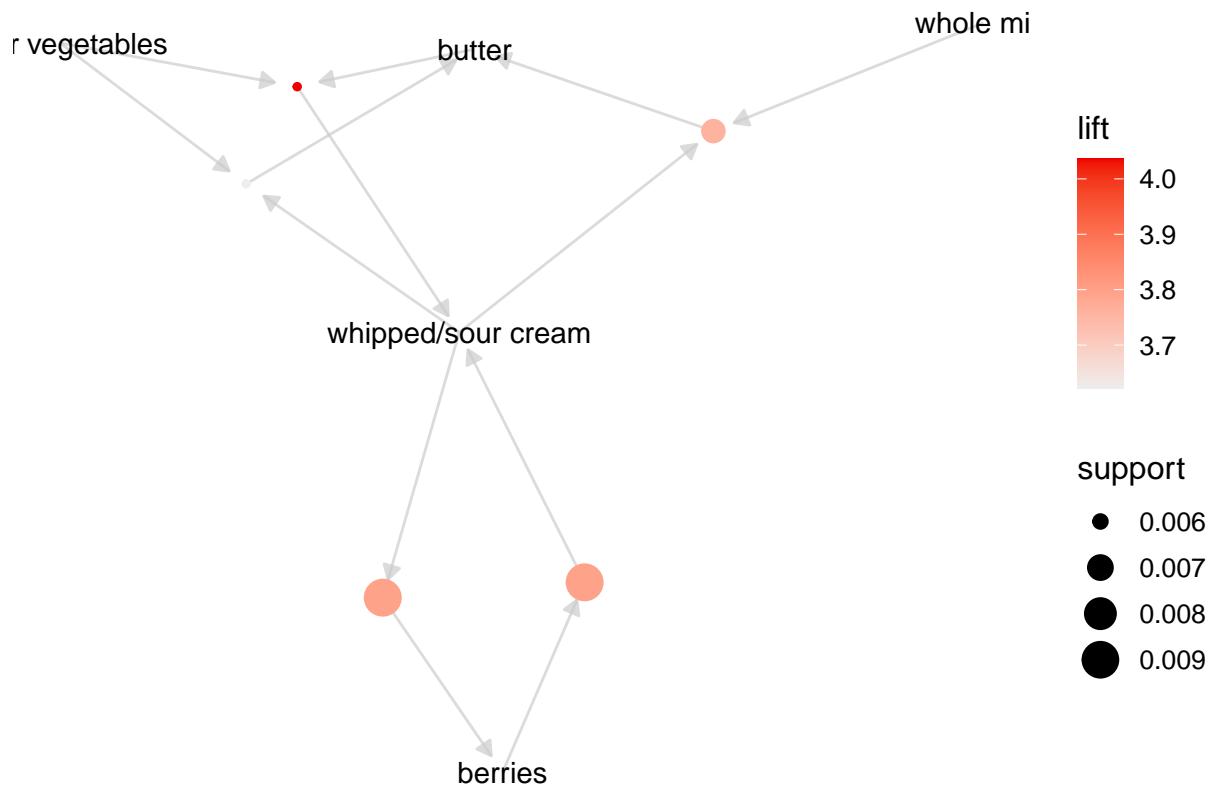
##      lhs                      rhs          support confidence coverage      lift count
## [1] {butter,
##       other vegetables}    => {whipped/sour cream} 0.005795628 0.2893401 0.02003050 4.036397  57
## [2] {berries}              => {whipped/sour cream} 0.009049314 0.2721713 0.03324860 3.796886  89
## [3] {whipped/sour cream} => {berries}           0.009049314 0.1262411 0.07168277 3.796886  89
## [4] {whipped/sour cream,
##       whole milk}         => {butter}            0.006710727 0.2082019 0.03223183 3.757185  66
## [5] {other vegetables,
##       whipped/sour cream} => {butter}            0.005795628 0.2007042 0.02887646 3.621883  57
## [6] {other vegetables,
##       whipped/sour cream} => {butter}            0.005795628 0.2007042 0.02887646 3.621883  57

```

```

##      whole milk,
##      yogurt}      => {whipped/sour cream} 0.005592272  0.2511416 0.02226741 3.503514 55
## [7] {root vegetables,
##      yogurt}      => {whipped/sour cream} 0.006405694  0.2480315 0.02582613 3.460127 63
## [8] {whipped/sour cream,
##      whole milk}   => {curd}                0.005897306  0.1829653 0.03223183 3.434091 58
## [9] {butter,
##      whole milk}   => {whipped/sour cream} 0.006710727  0.2435424 0.02755465 3.397503 66
## [10] {other vegetables,
##      yogurt}       => {whipped/sour cream} 0.010167768  0.2341920 0.04341637 3.267062 100

```

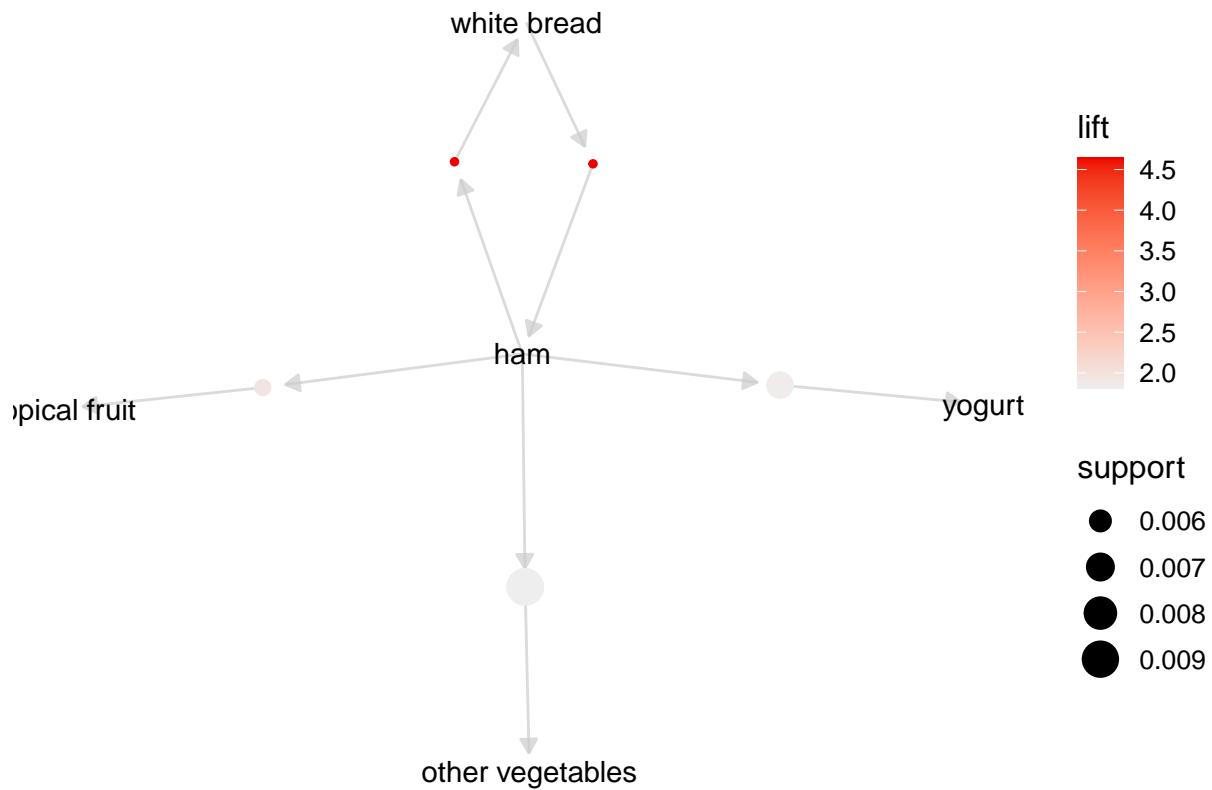


Berries, whipped cream and butter are bought together. These are the people who are interested in baking.

```

##      lhs          rhs          support    confidence coverage
## [1] {ham}        => {white bread} 0.005083884 0.1953125 0.02602949
## [2] {white bread} => {ham}        0.005083884 0.1207729 0.04209456
## [3] {ham}        => {tropical fruit} 0.005388917 0.2070312 0.02602949
##      lift      count
## [1] 4.639851 50
## [2] 4.639851 50
## [3] 1.973016 53

```



Ham is bought together with white bread and other vegetables.

INSIGHTS SUMMARY:

- Bread is frequently sold with Ham with very high lift but the support is a little low
- Yogurt is sold along with whipped/sour cream, yogurt gets a lift of ~2 and they have a good support as well
- We see that napkins are highly associated with hygiene articles due to which the lift is very high
- Ham is bought together with white bread and other vegetables
- Tropical fruit is bought when pip fruit is bought
- yogurt and tropical fruit are bought in conjunction