

STA_Rule_Mining

2024-08-18

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## Association Rule Mining

library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr    1.3.1
## v purrr    1.0.2

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(igraph)

##
## Attaching package: 'igraph'
##
## The following objects are masked from 'package:lubridate':
##
##     %--%, union
##
## The following objects are masked from 'package:dplyr':
##
##     as_data_frame, groups, union
##
## The following objects are masked from 'package:purrr':
##
##     compose, simplify
##
## The following object is masked from 'package:tidyrm':
##
##     crossing
##
## The following object is masked from 'package:tibble':
##
##     as_data_frame
##
## The following objects are masked from 'package:stats':
##
##     decompose, spectrum
##
## The following object is masked from 'package:base':
##
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##      union
library(arules)

## Loading required package: Matrix
##
## Attaching package: 'Matrix'
##
## The following objects are masked from 'package:tidyverse':
##       expand, pack, unpack
##
## Attaching package: 'arules'
##
## The following object is masked from 'package:dplyr':
##       recode
##
## The following objects are masked from 'package:base':
##       abbreviate, write

library(arulesViz)

groceries_raw = readLines("/Users/teamccormack/Downloads/groceries.txt")

str(groceries_raw)

##  chr [1:9835] "citrus fruit,semi-finished bread,margarine,ready soups" ...
summary(groceries_raw)

##      Length     Class      Mode
##      9835 character character
# each line gets separated by its items
basket_items = strsplit(groceries_raw, ',')
# convert from list to object
basket_object = as(basket_items, 'transactions')
summary(basket_object)

## transactions as itemMatrix in sparse format with
## 9835 rows (elements/itemsets/transactions) and
## 169 columns (items) and a density of 0.02609146
##
## most frequent items:
##      whole milk other vegetables      rolls/buns      soda
##            2513             1903             1809             1715
##      yogurt          (Other)
##            1372            34055
##
## element (itemset/transaction) length distribution:
## sizes
##   1   2   3   4   5   6   7   8   9   10  11  12  13  14  15  16
## 2159 1643 1299 1005 855 645 545 438 350 246 182 117 78 77 55 46

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##   17   18   19   20   21   22   23   24   26   27   28   29   32
##   29   14   14    9   11    4    6    1    1    1    1    3    1
##
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
##      1.000  2.000  3.000  4.409  6.000 32.000
##
## includes extended item information - examples:
##           labels
## 1 abrasive cleaner
## 2 artif. sweetener
## 3 baby cosmetics

# Fitting model
# Training Apriori on the dataset
association_rules = apriori(basket_object,
                             parameter = list(support = 0.005,
                                               confidence = 0.1))

## 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
##       10  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].

# look at the output
inspect(association_rules)

##          lhs                      rhs          support  confidence coverage
## [1] {} >= {bottled water} 0.110523640 0.1105236 1.0000000000
## [2] {} >= {tropical fruit} 0.104931368 0.1049314 1.0000000000
## [3] {} >= {root vegetables} 0.108998475 0.1089985 1.0000000000
## [4] {} >= {soda} 0.174377224 0.1743772 1.0000000000
## [5] {} >= {yogurt} 0.139501779 0.1395018 1.0000000000
## [6] {} >= {rolls/buns} 0.183934926 0.1839349 1.0000000000
## [7] {} >= {other vegetables} 0.193492628 0.1934926 1.0000000000
## [8] {} >= {whole milk} 0.255516014 0.2555160 1.0000000000
## [9] {cake bar} >= {whole milk} 0.005592272 0.4230769 0.013218099
## [10] {dishes} >= {other vegetables} 0.005998983 0.3410405 0.017590239
## [11] {dishes} >= {whole milk} 0.005287239 0.3005780 0.017590239
## [12] {mustard} >= {whole milk} 0.005185562 0.4322034 0.011997966

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## [13]	{pot plants}	=> {whole milk}	0.006914082	0.4000000	0.017285206
## [14]	{chewing gum}	=> {soda}	0.005388917	0.2560386	0.021047280
## [15]	{chewing gum}	=> {whole milk}	0.005083884	0.2415459	0.021047280
## [16]	{canned fish}	=> {other vegetables}	0.005083884	0.3378378	0.015048297
## [17]	{pasta}	=> {whole milk}	0.006100661	0.4054054	0.015048297
## [18]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429
## [19]	{herbs}	=> {other vegetables}	0.007727504	0.4750000	0.016268429
## [20]	{herbs}	=> {whole milk}	0.007727504	0.4750000	0.016268429
## [21]	{processed cheese}	=> {soda}	0.005287239	0.3190184	0.016573462
## [22]	{processed cheese}	=> {other vegetables}	0.005490595	0.3312883	0.016573462
## [23]	{processed cheese}	=> {whole milk}	0.007015760	0.4233129	0.016573462
## [24]	{semi-finished bread}	=> {other vegetables}	0.005185562	0.2931034	0.017691917
## [25]	{semi-finished bread}	=> {whole milk}	0.007117438	0.4022989	0.017691917
## [26]	{beverages}	=> {yogurt}	0.005490595	0.2109375	0.026029487
## [27]	{beverages}	=> {rolls/buns}	0.005388917	0.2070312	0.026029487
## [28]	{beverages}	=> {other vegetables}	0.005185562	0.1992188	0.026029487
## [29]	{beverages}	=> {whole milk}	0.006812405	0.2617188	0.026029487
## [30]	{ice cream}	=> {soda}	0.006100661	0.2439024	0.025012710
## [31]	{ice cream}	=> {other vegetables}	0.005083884	0.2032520	0.025012710
## [32]	{ice cream}	=> {whole milk}	0.005897306	0.2357724	0.025012710
## [33]	{detergent}	=> {other vegetables}	0.006405694	0.3333333	0.019217082
## [34]	{detergent}	=> {whole milk}	0.008947636	0.4656085	0.019217082
## [35]	{pickled vegetables}	=> {other vegetables}	0.006405694	0.3579545	0.017895272
## [36]	{pickled vegetables}	=> {whole milk}	0.007117438	0.3977273	0.017895272
## [37]	{baking powder}	=> {other vegetables}	0.007320793	0.4137931	0.017691917
## [38]	{baking powder}	=> {whole milk}	0.009252669	0.5229885	0.017691917
## [39]	{flour}	=> {other vegetables}	0.006304016	0.3625731	0.017386884
## [40]	{flour}	=> {whole milk}	0.008439248	0.4853801	0.017386884
## [41]	{soft cheese}	=> {yogurt}	0.005998983	0.3511905	0.017081851
## [42]	{soft cheese}	=> {rolls/buns}	0.005388917	0.3154762	0.017081851
## [43]	{soft cheese}	=> {other vegetables}	0.007117438	0.4166667	0.017081851
## [44]	{soft cheese}	=> {whole milk}	0.007524148	0.4404762	0.017081851
## [45]	{specialty bar}	=> {soda}	0.007219115	0.2639405	0.027351296
## [46]	{specialty bar}	=> {rolls/buns}	0.005592272	0.2044610	0.027351296
## [47]	{specialty bar}	=> {other vegetables}	0.005592272	0.2044610	0.027351296
## [48]	{specialty bar}	=> {whole milk}	0.006507372	0.2379182	0.027351296
## [49]	{misc. beverages}	=> {bottled water}	0.005287239	0.1863799	0.028368073
## [50]	{misc. beverages}	=> {soda}	0.007320793	0.2580645	0.028368073
## [51]	{misc. beverages}	=> {other vegetables}	0.005592272	0.1971326	0.028368073
## [52]	{misc. beverages}	=> {whole milk}	0.007015760	0.2473118	0.028368073
## [53]	{grapes}	=> {tropical fruit}	0.006100661	0.2727273	0.022369090
## [54]	{grapes}	=> {other vegetables}	0.009049314	0.4045455	0.022369090
## [55]	{grapes}	=> {whole milk}	0.007320793	0.3272727	0.022369090
## [56]	{cat food}	=> {yogurt}	0.006202339	0.2663755	0.023284189
## [57]	{cat food}	=> {other vegetables}	0.006507372	0.2794760	0.023284189
## [58]	{cat food}	=> {whole milk}	0.008845958	0.3799127	0.023284189
## [59]	{specialty chocolate}	=> {soda}	0.006304016	0.2073579	0.030401627
## [60]	{specialty chocolate}	=> {rolls/buns}	0.005592272	0.1839465	0.030401627
## [61]	{specialty chocolate}	=> {other vegetables}	0.006100661	0.2006689	0.030401627
## [62]	{specialty chocolate}	=> {whole milk}	0.008032537	0.2642140	0.030401627
## [63]	{meat}	=> {sausage}	0.005287239	0.2047244	0.025826131
## [64]	{meat}	=> {root vegetables}	0.005083884	0.1968504	0.025826131
## [65]	{meat}	=> {soda}	0.005490595	0.2125984	0.025826131
## [66]	{meat}	=> {yogurt}	0.005287239	0.2047244	0.025826131

## [67]	{meat}	=> {rolls/buns}	0.006914082	0.2677165	0.025826131
## [68]	{meat}	=> {other vegetables}	0.009964413	0.3858268	0.025826131
## [69]	{meat}	=> {whole milk}	0.009964413	0.3858268	0.025826131
## [70]	{frozen meals}	=> {tropical fruit}	0.005490595	0.1935484	0.028368073
## [71]	{frozen meals}	=> {soda}	0.006202339	0.2186380	0.028368073
## [72]	{frozen meals}	=> {yogurt}	0.006202339	0.2186380	0.028368073
## [73]	{frozen meals}	=> {other vegetables}	0.007524148	0.2652330	0.028368073
## [74]	{frozen meals}	=> {whole milk}	0.009862735	0.3476703	0.028368073
## [75]	{hard cheese}	=> {sausage}	0.005185562	0.2116183	0.024504321
## [76]	{hard cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321
## [77]	{hard cheese}	=> {yogurt}	0.006405694	0.2614108	0.024504321
## [78]	{hard cheese}	=> {rolls/buns}	0.005897306	0.2406639	0.024504321
## [79]	{hard cheese}	=> {other vegetables}	0.009456024	0.3858921	0.024504321
## [80]	{hard cheese}	=> {whole milk}	0.010066090	0.4107884	0.024504321
## [81]	{butter milk}	=> {pip fruit}	0.005083884	0.1818182	0.027961362
## [82]	{butter milk}	=> {tropical fruit}	0.005490595	0.1963636	0.027961362
## [83]	{butter milk}	=> {root vegetables}	0.005083884	0.1818182	0.027961362
## [84]	{butter milk}	=> {yogurt}	0.008540925	0.3054545	0.027961362
## [85]	{butter milk}	=> {rolls/buns}	0.007625826	0.2727273	0.027961362
## [86]	{butter milk}	=> {other vegetables}	0.010371124	0.3709091	0.027961362
## [87]	{butter milk}	=> {whole milk}	0.011591256	0.4145455	0.027961362
## [88]	{candy}	=> {tropical fruit}	0.005388917	0.1802721	0.029893238
## [89]	{candy}	=> {soda}	0.008642603	0.2891156	0.029893238
## [90]	{candy}	=> {yogurt}	0.005490595	0.1836735	0.029893238
## [91]	{candy}	=> {rolls/buns}	0.007117438	0.2380952	0.029893238
## [92]	{candy}	=> {other vegetables}	0.006914082	0.2312925	0.029893238
## [93]	{candy}	=> {whole milk}	0.008235892	0.2755102	0.029893238
## [94]	{ham}	=> {white bread}	0.005083884	0.1953125	0.026029487
## [95]	{white bread}	=> {ham}	0.005083884	0.1207729	0.042094560
## [96]	{ham}	=> {tropical fruit}	0.005388917	0.2070312	0.026029487
## [97]	{ham}	=> {yogurt}	0.006710727	0.2578125	0.026029487
## [98]	{ham}	=> {rolls/buns}	0.006914082	0.2656250	0.026029487
## [99]	{ham}	=> {other vegetables}	0.009150991	0.3515625	0.026029487
## [100]	{ham}	=> {whole milk}	0.011489578	0.4414062	0.026029487
## [101]	{sliced cheese}	=> {sausage}	0.007015760	0.2863071	0.024504321
## [102]	{sliced cheese}	=> {tropical fruit}	0.005287239	0.2157676	0.024504321
## [103]	{sliced cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321
## [104]	{sliced cheese}	=> {soda}	0.005083884	0.2074689	0.024504321
## [105]	{sliced cheese}	=> {yogurt}	0.008032537	0.3278008	0.024504321
## [106]	{sliced cheese}	=> {rolls/buns}	0.007625826	0.3112033	0.024504321
## [107]	{sliced cheese}	=> {other vegetables}	0.009049314	0.3692946	0.024504321
## [108]	{sliced cheese}	=> {whole milk}	0.010777834	0.4398340	0.024504321
## [109]	{UHT-milk}	=> {bottled water}	0.007320793	0.2188450	0.033451957
## [110]	{UHT-milk}	=> {soda}	0.007625826	0.2279635	0.033451957
## [111]	{UHT-milk}	=> {yogurt}	0.007422471	0.2218845	0.033451957
## [112]	{UHT-milk}	=> {rolls/buns}	0.006405694	0.1914894	0.033451957
## [113]	{UHT-milk}	=> {other vegetables}	0.008134215	0.2431611	0.033451957
## [114]	{oil}	=> {root vegetables}	0.007015760	0.2500000	0.028063040
## [115]	{oil}	=> {yogurt}	0.005287239	0.1884058	0.028063040
## [116]	{oil}	=> {rolls/buns}	0.005083884	0.1811594	0.028063040
## [117]	{oil}	=> {other vegetables}	0.009964413	0.3550725	0.028063040
## [118]	{oil}	=> {whole milk}	0.011286223	0.4021739	0.028063040
## [119]	{onions}	=> {whipped/sour cream}	0.005083884	0.1639344	0.031011693
## [120]	{onions}	=> {citrus fruit}	0.005592272	0.1803279	0.031011693

## [121]	{onions}	=> {bottled water}	0.005897306	0.1901639	0.031011693
## [122]	{onions}	=> {tropical fruit}	0.005693950	0.1836066	0.031011693
## [123]	{onions}	=> {root vegetables}	0.009456024	0.3049180	0.031011693
## [124]	{onions}	=> {soda}	0.005287239	0.1704918	0.031011693
## [125]	{onions}	=> {yogurt}	0.007219115	0.2327869	0.031011693
## [126]	{onions}	=> {rolls/buns}	0.006812405	0.2196721	0.031011693
## [127]	{onions}	=> {other vegetables}	0.014234875	0.4590164	0.031011693
## [128]	{onions}	=> {whole milk}	0.012099644	0.3901639	0.031011693
## [129]	{berries}	=> {whipped/sour cream}	0.009049314	0.2721713	0.033248602
## [130]	{whipped/sour cream}	=> {berries}	0.009049314	0.1262411	0.071682766
## [131]	{berries}	=> {citrus fruit}	0.005388917	0.1620795	0.033248602
## [132]	{berries}	=> {tropical fruit}	0.006710727	0.2018349	0.033248602
## [133]	{berries}	=> {root vegetables}	0.006609049	0.1987768	0.033248602
## [134]	{berries}	=> {soda}	0.007320793	0.2201835	0.033248602
## [135]	{berries}	=> {yogurt}	0.010574479	0.3180428	0.033248602
## [136]	{berries}	=> {rolls/buns}	0.006609049	0.1987768	0.033248602
## [137]	{berries}	=> {other vegetables}	0.010269446	0.3088685	0.033248602
## [138]	{berries}	=> {whole milk}	0.011794611	0.3547401	0.033248602
## [139]	{hamburger meat}	=> {sausage}	0.005185562	0.1559633	0.033248602
## [140]	{hamburger meat}	=> {root vegetables}	0.006202339	0.1865443	0.033248602
## [141]	{hamburger meat}	=> {soda}	0.005795628	0.1743119	0.033248602
## [142]	{hamburger meat}	=> {yogurt}	0.006507372	0.1957187	0.033248602
## [143]	{hamburger meat}	=> {rolls/buns}	0.008642603	0.2599388	0.033248602
## [144]	{hamburger meat}	=> {other vegetables}	0.013828165	0.4159021	0.033248602
## [145]	{hamburger meat}	=> {whole milk}	0.014743264	0.4434251	0.033248602
## [146]	{hygiene articles}	=> {napkins}	0.006100661	0.1851852	0.032943569
## [147]	{napkins}	=> {hygiene articles}	0.006100661	0.1165049	0.052364006
## [148]	{hygiene articles}	=> {citrus fruit}	0.005287239	0.1604938	0.032943569
## [149]	{hygiene articles}	=> {shopping bags}	0.005185562	0.1574074	0.032943569
## [150]	{hygiene articles}	=> {bottled water}	0.005693950	0.1728395	0.032943569
## [151]	{hygiene articles}	=> {tropical fruit}	0.006710727	0.2037037	0.032943569
## [152]	{hygiene articles}	=> {root vegetables}	0.005388917	0.1635802	0.032943569
## [153]	{hygiene articles}	=> {soda}	0.007015760	0.2129630	0.032943569
## [154]	{hygiene articles}	=> {yogurt}	0.007320793	0.2222222	0.032943569
## [155]	{hygiene articles}	=> {rolls/buns}	0.005897306	0.1790123	0.032943569
## [156]	{hygiene articles}	=> {other vegetables}	0.009557702	0.2901235	0.032943569
## [157]	{hygiene articles}	=> {whole milk}	0.012811388	0.3888889	0.032943569
## [158]	{salty snack}	=> {fruit/vegetable juice}	0.005998983	0.1586022	0.037824098
## [159]	{salty snack}	=> {whipped/sour cream}	0.005185562	0.1370968	0.037824098
## [160]	{salty snack}	=> {pastry}	0.005185562	0.1370968	0.037824098
## [161]	{salty snack}	=> {shopping bags}	0.005998983	0.1586022	0.037824098
## [162]	{salty snack}	=> {sausage}	0.005287239	0.1397849	0.037824098
## [163]	{salty snack}	=> {tropical fruit}	0.005592272	0.1478495	0.037824098
## [164]	{salty snack}	=> {soda}	0.009354347	0.2473118	0.037824098
## [165]	{salty snack}	=> {yogurt}	0.006202339	0.1639785	0.037824098
## [166]	{salty snack}	=> {other vegetables}	0.010777834	0.2849462	0.037824098
## [167]	{salty snack}	=> {whole milk}	0.011184545	0.2956989	0.037824098
## [168]	{sugar}	=> {margarine}	0.005490595	0.1621622	0.033858668
## [169]	{sugar}	=> {pastry}	0.005185562	0.1531532	0.033858668
## [170]	{sugar}	=> {root vegetables}	0.006405694	0.1891892	0.033858668
## [171]	{sugar}	=> {soda}	0.007320793	0.2162162	0.033858668
## [172]	{sugar}	=> {yogurt}	0.006914082	0.2042042	0.033858668
## [173]	{sugar}	=> {rolls/buns}	0.007015760	0.2072072	0.033858668
## [174]	{sugar}	=> {other vegetables}	0.010777834	0.3183183	0.033858668

## [175]	{sugar}	=> {whole milk}	0.015048297	0.4444444	0.033858668
## [176]	{waffles}	=> {chocolate}	0.005795628	0.1507937	0.038434164
## [177]	{chocolate}	=> {waffles}	0.005795628	0.1168033	0.049618709
## [178]	{waffles}	=> {whipped/sour cream}	0.005083884	0.1322751	0.038434164
## [179]	{waffles}	=> {pastry}	0.007015760	0.1825397	0.038434164
## [180]	{waffles}	=> {shopping bags}	0.005490595	0.1428571	0.038434164
## [181]	{waffles}	=> {tropical fruit}	0.006100661	0.1587302	0.038434164
## [182]	{waffles}	=> {root vegetables}	0.006609049	0.1719577	0.038434164
## [183]	{waffles}	=> {soda}	0.009557702	0.2486772	0.038434164
## [184]	{waffles}	=> {yogurt}	0.007524148	0.1957672	0.038434164
## [185]	{waffles}	=> {rolls/buns}	0.009150991	0.2380952	0.038434164
## [186]	{waffles}	=> {other vegetables}	0.010066090	0.2619048	0.038434164
## [187]	{waffles}	=> {whole milk}	0.012709710	0.3306878	0.038434164
## [188]	{long life bakery product}	=> {chocolate}	0.005287239	0.1413043	0.037417387
## [189]	{chocolate}	=> {long life bakery product}	0.005287239	0.1065574	0.049618709
## [190]	{long life bakery product}	=> {fruit/vegetable juice}	0.006202339	0.1657609	0.037417387
## [191]	{long life bakery product}	=> {whipped/sour cream}	0.005795628	0.1548913	0.037417387
## [192]	{long life bakery product}	=> {pastry}	0.005897306	0.1576087	0.037417387
## [193]	{long life bakery product}	=> {shopping bags}	0.005388917	0.1440217	0.037417387
## [194]	{long life bakery product}	=> {sausage}	0.005388917	0.1440217	0.037417387
## [195]	{long life bakery product}	=> {tropical fruit}	0.006304016	0.1684783	0.037417387
## [196]	{long life bakery product}	=> {root vegetables}	0.005287239	0.1413043	0.037417387
## [197]	{long life bakery product}	=> {soda}	0.007625826	0.2038043	0.037417387
## [198]	{long life bakery product}	=> {yogurt}	0.008744281	0.2336957	0.037417387
## [199]	{long life bakery product}	=> {rolls/buns}	0.007930859	0.2119565	0.037417387
## [200]	{long life bakery product}	=> {other vegetables}	0.010676157	0.2853261	0.037417387
## [201]	{long life bakery product}	=> {whole milk}	0.013523132	0.3614130	0.037417387
## [202]	{dessert}	=> {curd}	0.005185562	0.1397260	0.037112354
## [203]	{dessert}	=> {fruit/vegetable juice}	0.005998983	0.1616438	0.037112354
## [204]	{dessert}	=> {pastry}	0.005388917	0.1452055	0.037112354
## [205]	{dessert}	=> {shopping bags}	0.006202339	0.1671233	0.037112354
## [206]	{dessert}	=> {sausage}	0.005897306	0.1589041	0.037112354
## [207]	{dessert}	=> {bottled water}	0.005185562	0.1397260	0.037112354
## [208]	{dessert}	=> {tropical fruit}	0.006304016	0.1698630	0.037112354
## [209]	{dessert}	=> {root vegetables}	0.005795628	0.1561644	0.037112354
## [210]	{dessert}	=> {soda}	0.009862735	0.2657534	0.037112354
## [211]	{dessert}	=> {yogurt}	0.009862735	0.2657534	0.037112354
## [212]	{dessert}	=> {rolls/buns}	0.006812405	0.1835616	0.037112354
## [213]	{dessert}	=> {other vegetables}	0.011591256	0.3123288	0.037112354
## [214]	{dessert}	=> {whole milk}	0.013726487	0.3698630	0.037112354
## [215]	{canned beer}	=> {shopping bags}	0.011387900	0.1465969	0.077681749
## [216]	{shopping bags}	=> {canned beer}	0.011387900	0.1155831	0.098525674
## [217]	{canned beer}	=> {bottled water}	0.008032537	0.1034031	0.077681749
## [218]	{canned beer}	=> {soda}	0.013828165	0.1780105	0.077681749
## [219]	{canned beer}	=> {rolls/buns}	0.011286223	0.1452880	0.077681749
## [220]	{canned beer}	=> {other vegetables}	0.009049314	0.1164921	0.077681749
## [221]	{canned beer}	=> {whole milk}	0.008845958	0.1138743	0.077681749
## [222]	{cream cheese }	=> {curd}	0.005083884	0.1282051	0.039654296
## [223]	{cream cheese }	=> {domestic eggs}	0.005083884	0.1282051	0.039654296
## [224]	{cream cheese }	=> {fruit/vegetable juice}	0.005693950	0.1435897	0.039654296
## [225]	{cream cheese }	=> {whipped/sour cream}	0.006405694	0.1615385	0.039654296
## [226]	{cream cheese }	=> {pip fruit}	0.006100661	0.1538462	0.039654296
## [227]	{cream cheese }	=> {citrus fruit}	0.005693950	0.1435897	0.039654296
## [228]	{cream cheese }	=> {shopping bags}	0.005592272	0.1410256	0.039654296

## [229]	{cream cheese }	=> {sausage}	0.005592272	0.1410256	0.039654296
## [230]	{cream cheese }	=> {bottled water}	0.005897306	0.1487179	0.039654296
## [231]	{cream cheese }	=> {tropical fruit}	0.007219115	0.1820513	0.039654296
## [232]	{cream cheese }	=> {root vegetables}	0.007524148	0.1897436	0.039654296
## [233]	{cream cheese }	=> {soda}	0.006812405	0.1717949	0.039654296
## [234]	{cream cheese }	=> {yogurt}	0.012404677	0.3128205	0.039654296
## [235]	{cream cheese }	=> {rolls/buns}	0.009964413	0.2512821	0.039654296
## [236]	{cream cheese }	=> {other vegetables}	0.013726487	0.3461538	0.039654296
## [237]	{cream cheese }	=> {whole milk}	0.016471784	0.4153846	0.039654296
## [238]	{chicken}	=> {frozen vegetables}	0.006710727	0.1563981	0.042907982
## [239]	{frozen vegetables}	=> {chicken}	0.006710727	0.1395349	0.048093543
## [240]	{chicken}	=> {pork}	0.005795628	0.1350711	0.042907982
## [241]	{pork}	=> {chicken}	0.005795628	0.1005291	0.057651246
## [242]	{chicken}	=> {butter}	0.005795628	0.1350711	0.042907982
## [243]	{butter}	=> {chicken}	0.005795628	0.1045872	0.055414337
## [244]	{chicken}	=> {newspapers}	0.005185562	0.1208531	0.042907982
## [245]	{chicken}	=> {domestic eggs}	0.006202339	0.1445498	0.042907982
## [246]	{chicken}	=> {whipped/sour cream}	0.007219115	0.1682464	0.042907982
## [247]	{whipped/sour cream}	=> {chicken}	0.007219115	0.1007092	0.071682766
## [248]	{chicken}	=> {citrus fruit}	0.006914082	0.1611374	0.042907982
## [249]	{chicken}	=> {sausage}	0.005287239	0.1232227	0.042907982
## [250]	{chicken}	=> {bottled water}	0.005287239	0.1232227	0.042907982
## [251]	{chicken}	=> {tropical fruit}	0.006405694	0.1492891	0.042907982
## [252]	{chicken}	=> {root vegetables}	0.010879512	0.2535545	0.042907982
## [253]	{chicken}	=> {soda}	0.008337570	0.1943128	0.042907982
## [254]	{chicken}	=> {yogurt}	0.008337570	0.1943128	0.042907982
## [255]	{chicken}	=> {rolls/buns}	0.009659380	0.2251185	0.042907982
## [256]	{chicken}	=> {other vegetables}	0.017895272	0.4170616	0.042907982
## [257]	{chicken}	=> {whole milk}	0.017590239	0.4099526	0.042907982
## [258]	{white bread}	=> {frankfurter}	0.005185562	0.1231884	0.042094560
## [259]	{white bread}	=> {domestic eggs}	0.005795628	0.1376812	0.042094560
## [260]	{white bread}	=> {fruit/vegetable juice}	0.007422471	0.1763285	0.042094560
## [261]	{fruit/vegetable juice}	=> {white bread}	0.007422471	0.1026723	0.072292832
## [262]	{white bread}	=> {whipped/sour cream}	0.005490595	0.1304348	0.042094560
## [263]	{white bread}	=> {pip fruit}	0.006609049	0.1570048	0.042094560
## [264]	{white bread}	=> {pastry}	0.005592272	0.1328502	0.042094560
## [265]	{white bread}	=> {shopping bags}	0.007422471	0.1763285	0.042094560
## [266]	{white bread}	=> {sausage}	0.007219115	0.1714976	0.042094560
## [267]	{white bread}	=> {tropical fruit}	0.008744281	0.2077295	0.042094560
## [268]	{white bread}	=> {root vegetables}	0.007930859	0.1884058	0.042094560
## [269]	{white bread}	=> {soda}	0.010269446	0.2439614	0.042094560
## [270]	{white bread}	=> {yogurt}	0.009049314	0.2149758	0.042094560
## [271]	{white bread}	=> {rolls/buns}	0.006507372	0.1545894	0.042094560
## [272]	{white bread}	=> {other vegetables}	0.013726487	0.3260870	0.042094560
## [273]	{white bread}	=> {whole milk}	0.017081851	0.4057971	0.042094560
## [274]	{chocolate}	=> {butter}	0.006202339	0.1250000	0.049618709
## [275]	{butter}	=> {chocolate}	0.006202339	0.1119266	0.055414337
## [276]	{chocolate}	=> {newspapers}	0.005490595	0.1106557	0.049618709
## [277]	{chocolate}	=> {fruit/vegetable juice}	0.006812405	0.1372951	0.049618709
## [278]	{chocolate}	=> {pip fruit}	0.006100661	0.1229508	0.049618709
## [279]	{chocolate}	=> {pastry}	0.008032537	0.1618852	0.049618709
## [280]	{chocolate}	=> {citrus fruit}	0.006405694	0.1290984	0.049618709
## [281]	{chocolate}	=> {shopping bags}	0.008134215	0.1639344	0.049618709
## [282]	{chocolate}	=> {sausage}	0.006609049	0.1331967	0.049618709

## [283]	{chocolate}	=> {bottled water}	0.005795628	0.1168033	0.049618709
## [284]	{chocolate}	=> {tropical fruit}	0.008134215	0.1639344	0.049618709
## [285]	{chocolate}	=> {root vegetables}	0.006405694	0.1290984	0.049618709
## [286]	{chocolate}	=> {soda}	0.013523132	0.2725410	0.049618709
## [287]	{chocolate}	=> {yogurt}	0.009252669	0.1864754	0.049618709
## [288]	{chocolate}	=> {rolls/buns}	0.011794611	0.2377049	0.049618709
## [289]	{chocolate}	=> {other vegetables}	0.012709710	0.2561475	0.049618709
## [290]	{chocolate}	=> {whole milk}	0.016675140	0.3360656	0.049618709
## [291]	{coffee}	=> {fruit/vegetable juice}	0.005998983	0.1033275	0.058057956
## [292]	{coffee}	=> {whipped/sour cream}	0.006100661	0.1050788	0.058057956
## [293]	{coffee}	=> {pip fruit}	0.006914082	0.1190893	0.058057956
## [294]	{coffee}	=> {pastry}	0.006914082	0.1190893	0.058057956
## [295]	{coffee}	=> {citrus fruit}	0.006405694	0.1103327	0.058057956
## [296]	{coffee}	=> {shopping bags}	0.009354347	0.1611208	0.058057956
## [297]	{coffee}	=> {sausage}	0.006914082	0.1190893	0.058057956
## [298]	{coffee}	=> {bottled water}	0.007320793	0.1260946	0.058057956
## [299]	{coffee}	=> {tropical fruit}	0.007117438	0.1225919	0.058057956
## [300]	{coffee}	=> {root vegetables}	0.007320793	0.1260946	0.058057956
## [301]	{coffee}	=> {soda}	0.009964413	0.1716287	0.058057956
## [302]	{coffee}	=> {yogurt}	0.009761057	0.1681261	0.058057956
## [303]	{coffee}	=> {rolls/buns}	0.010981190	0.1891419	0.058057956
## [304]	{coffee}	=> {other vegetables}	0.013421454	0.2311734	0.058057956
## [305]	{coffee}	=> {whole milk}	0.018708693	0.3222417	0.058057956
## [306]	{frozen vegetables}	=> {pork}	0.006405694	0.1331924	0.048093543
## [307]	{pork}	=> {frozen vegetables}	0.006405694	0.1111111	0.057651246
## [308]	{frozen vegetables}	=> {frankfurter}	0.005083884	0.1057082	0.048093543
## [309]	{frozen vegetables}	=> {margarine}	0.005083884	0.1057082	0.048093543
## [310]	{frozen vegetables}	=> {butter}	0.005795628	0.1205074	0.048093543
## [311]	{butter}	=> {frozen vegetables}	0.005795628	0.1045872	0.055414337
## [312]	{frozen vegetables}	=> {domestic eggs}	0.005185562	0.1078224	0.048093543
## [313]	{frozen vegetables}	=> {fruit/vegetable juice}	0.007829181	0.1627907	0.048093543
## [314]	{fruit/vegetable juice}	=> {frozen vegetables}	0.007829181	0.1082982	0.072292832
## [315]	{frozen vegetables}	=> {whipped/sour cream}	0.007930859	0.1649049	0.048093543
## [316]	{whipped/sour cream}	=> {frozen vegetables}	0.007930859	0.1106383	0.071682766
## [317]	{frozen vegetables}	=> {pip fruit}	0.007320793	0.1522199	0.048093543
## [318]	{frozen vegetables}	=> {citrus fruit}	0.006609049	0.1374207	0.048093543
## [319]	{frozen vegetables}	=> {sausage}	0.005998983	0.1247357	0.048093543
## [320]	{frozen vegetables}	=> {bottled water}	0.006202339	0.1289641	0.048093543
## [321]	{frozen vegetables}	=> {tropical fruit}	0.008744281	0.1818182	0.048093543
## [322]	{frozen vegetables}	=> {root vegetables}	0.011591256	0.2410148	0.048093543
## [323]	{root vegetables}	=> {frozen vegetables}	0.011591256	0.1063433	0.108998475
## [324]	{frozen vegetables}	=> {soda}	0.008642603	0.1797040	0.048093543
## [325]	{frozen vegetables}	=> {yogurt}	0.012404677	0.2579281	0.048093543
## [326]	{frozen vegetables}	=> {rolls/buns}	0.010167768	0.2114165	0.048093543
## [327]	{frozen vegetables}	=> {other vegetables}	0.017793594	0.3699789	0.048093543
## [328]	{frozen vegetables}	=> {whole milk}	0.020437214	0.4249471	0.048093543
## [329]	{beef}	=> {pork}	0.007625826	0.1453488	0.052465684
## [330]	{pork}	=> {beef}	0.007625826	0.1322751	0.057651246
## [331]	{beef}	=> {margarine}	0.006202339	0.1182171	0.052465684
## [332]	{margarine}	=> {beef}	0.006202339	0.1059028	0.058566345
## [333]	{beef}	=> {butter}	0.005795628	0.1104651	0.052465684
## [334]	{butter}	=> {beef}	0.005795628	0.1045872	0.055414337
## [335]	{beef}	=> {newspapers}	0.006405694	0.1220930	0.052465684
## [336]	{beef}	=> {domestic eggs}	0.005998983	0.1143411	0.052465684

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## [337] {beef}                                     => {whipped/sour cream} 0.006710727 0.1279070 0.052465684
## [338] {beef}                                     => {pastry}           0.006304016 0.1201550 0.052465684
## [339] {beef}                                     => {citrus fruit}    0.008439248 0.1608527 0.052465684
## [340] {citrus fruit}                           => {beef}             0.008439248 0.1019656 0.082765633
## [341] {beef}                                     => {sausage}          0.005592272 0.1065891 0.052465684
## [342] {beef}                                     => {bottled water}   0.006202339 0.1182171 0.052465684
## [343] {beef}                                     => {tropical fruit}  0.007625826 0.1453488 0.052465684
## [344] {beef}                                     => {root vegetables} 0.017386884 0.3313953 0.052465684
## [345] {root vegetables}                        => {beef}             0.017386884 0.1595149 0.108998475
## [346] {beef}                                     => {soda}              0.008134215 0.1550388 0.052465684
## [347] {beef}                                     => {yogurt}            0.011692933 0.2228682 0.052465684
## [348] {beef}                                     => {rolls/buns}       0.013624809 0.2596899 0.052465684
## [349] {beef}                                     => {other vegetables} 0.019725470 0.3759690 0.052465684
## [350] {other vegetables}                      => {beef}             0.019725470 0.1019443 0.193492628
## [351] {beef}                                     => {whole milk}        0.021250635 0.4050388 0.052465684
## [352] {curd}                                    => {margarine}         0.006304016 0.1183206 0.053279105
## [353] {margarine}                            => {curd}              0.006304016 0.1076389 0.058566345
## [354] {curd}                                    => {butter}             0.006812405 0.1278626 0.053279105
## [355] {butter}                                 => {curd}              0.006812405 0.1229358 0.055414337
## [356] {curd}                                    => {newspapers}        0.005693950 0.1068702 0.053279105
## [357] {curd}                                    => {domestic eggs}    0.006507372 0.1221374 0.053279105
## [358] {domestic eggs}                         => {curd}              0.006507372 0.1025641 0.063446873
## [359] {curd}                                    => {whipped/sour cream} 0.010472801 0.1965649 0.053279105
## [360] {whipped/sour cream}                    => {curd}              0.010472801 0.1460993 0.071682766
## [361] {curd}                                    => {pip fruit}          0.007829181 0.1469466 0.053279105
## [362] {pip fruit}                            => {curd}              0.007829181 0.1034946 0.075648195
## [363] {curd}                                    => {pastry}             0.007524148 0.1412214 0.053279105
## [364] {curd}                                    => {citrus fruit}      0.007117438 0.1335878 0.053279105
## [365] {curd}                                    => {shopping bags}    0.005388917 0.1011450 0.053279105
## [366] {curd}                                    => {sausage}            0.007625826 0.1431298 0.053279105
## [367] {curd}                                    => {bottled water}    0.006100661 0.1145038 0.053279105
## [368] {curd}                                    => {tropical fruit}   0.010269446 0.1927481 0.053279105
## [369] {curd}                                    => {root vegetables}  0.010879512 0.2041985 0.053279105
## [370] {curd}                                    => {soda}               0.008134215 0.1526718 0.053279105
## [371] {curd}                                    => {yogurt}             0.017285206 0.3244275 0.053279105
## [372] {yogurt}                                => {curd}              0.017285206 0.1239067 0.139501779
## [373] {curd}                                    => {rolls/buns}        0.010066090 0.1889313 0.053279105
## [374] {curd}                                    => {other vegetables} 0.017183528 0.3225191 0.053279105
## [375] {curd}                                    => {whole milk}         0.026131164 0.4904580 0.053279105
## [376] {whole milk}                           => {curd}              0.026131164 0.1022682 0.255516014
## [377] {napkins}                               => {newspapers}        0.006202339 0.1184466 0.052364006
## [378] {napkins}                               => {domestic eggs}    0.005998983 0.1145631 0.052364006
## [379] {napkins}                               => {fruit/vegetable juice} 0.006914082 0.1320388 0.052364006
## [380] {napkins}                               => {whipped/sour cream} 0.007219115 0.1378641 0.052364006
## [381] {whipped/sour cream}                  => {napkins}            0.007219115 0.1007092 0.071682766
## [382] {napkins}                               => {pip fruit}          0.006710727 0.1281553 0.052364006
## [383] {napkins}                               => {pastry}             0.007015760 0.1339806 0.052364006
## [384] {napkins}                               => {citrus fruit}      0.007625826 0.1456311 0.052364006
## [385] {napkins}                               => {shopping bags}    0.007219115 0.1378641 0.052364006
## [386] {napkins}                               => {sausage}            0.006710727 0.1281553 0.052364006
## [387] {napkins}                               => {bottled water}    0.008642603 0.1650485 0.052364006
## [388] {napkins}                               => {tropical fruit}   0.010066090 0.1922330 0.052364006
## [389] {napkins}                               => {root vegetables}  0.009964413 0.1902913 0.052364006
## [390] {napkins}                               => {soda}               0.011997966 0.2291262 0.052364006

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## [391]	{napkins}	=> {yogurt}	0.012302999	0.2349515	0.052364006
## [392]	{napkins}	=> {rolls/buns}	0.011692933	0.2233010	0.052364006
## [393]	{napkins}	=> {other vegetables}	0.014438231	0.2757282	0.052364006
## [394]	{napkins}	=> {whole milk}	0.019725470	0.3766990	0.052364006
## [395]	{pork}	=> {frankfurter}	0.005897306	0.1022928	0.057651246
## [396]	{frankfurter}	=> {pork}	0.005897306	0.1000000	0.058973055
## [397]	{pork}	=> {margarine}	0.006405694	0.1111111	0.057651246
## [398]	{margarine}	=> {pork}	0.006405694	0.1093750	0.058566345
## [399]	{pork}	=> {newspapers}	0.006609049	0.1146384	0.057651246
## [400]	{pork}	=> {whipped/sour cream}	0.008235892	0.1428571	0.057651246
## [401]	{whipped/sour cream}	=> {pork}	0.008235892	0.1148936	0.071682766
## [402]	{pork}	=> {pip fruit}	0.006100661	0.1058201	0.057651246
## [403]	{pork}	=> {pastry}	0.006304016	0.1093474	0.057651246
## [404]	{pork}	=> {citrus fruit}	0.006507372	0.1128748	0.057651246
## [405]	{pork}	=> {shopping bags}	0.006405694	0.1111111	0.057651246
## [406]	{pork}	=> {sausage}	0.006507372	0.1128748	0.057651246
## [407]	{pork}	=> {bottled water}	0.007422471	0.1287478	0.057651246
## [408]	{pork}	=> {tropical fruit}	0.008540925	0.1481481	0.057651246
## [409]	{pork}	=> {root vegetables}	0.013624809	0.2363316	0.057651246
## [410]	{root vegetables}	=> {pork}	0.013624809	0.1250000	0.108998475
## [411]	{pork}	=> {soda}	0.011896289	0.2063492	0.057651246
## [412]	{pork}	=> {yogurt}	0.009557702	0.1657848	0.057651246
## [413]	{pork}	=> {rolls/buns}	0.011286223	0.1957672	0.057651246
## [414]	{pork}	=> {other vegetables}	0.021657346	0.3756614	0.057651246
## [415]	{other vegetables}	=> {pork}	0.021657346	0.1119285	0.193492628
## [416]	{pork}	=> {whole milk}	0.022165735	0.3844797	0.057651246
## [417]	{frankfurter}	=> {brown bread}	0.007117438	0.1206897	0.058973055
## [418]	{brown bread}	=> {frankfurter}	0.007117438	0.1097179	0.064870361
## [419]	{frankfurter}	=> {margarine}	0.006405694	0.1086207	0.058973055
## [420]	{margarine}	=> {frankfurter}	0.006405694	0.1093750	0.058566345
## [421]	{frankfurter}	=> {domestic eggs}	0.007015760	0.1189655	0.058973055
## [422]	{domestic eggs}	=> {frankfurter}	0.007015760	0.1105769	0.063446873
## [423]	{frankfurter}	=> {whipped/sour cream}	0.006202339	0.1051724	0.058973055
## [424]	{frankfurter}	=> {pip fruit}	0.007219115	0.1224138	0.058973055
## [425]	{frankfurter}	=> {pastry}	0.008337570	0.1413793	0.058973055
## [426]	{frankfurter}	=> {citrus fruit}	0.006507372	0.1103448	0.058973055
## [427]	{frankfurter}	=> {shopping bags}	0.008235892	0.1396552	0.058973055
## [428]	{frankfurter}	=> {sausage}	0.010066090	0.1706897	0.058973055
## [429]	{sausage}	=> {frankfurter}	0.010066090	0.1071429	0.093950178
## [430]	{frankfurter}	=> {bottled water}	0.007320793	0.1241379	0.058973055
## [431]	{frankfurter}	=> {tropical fruit}	0.009456024	0.1603448	0.058973055
## [432]	{frankfurter}	=> {root vegetables}	0.010167768	0.1724138	0.058973055
## [433]	{frankfurter}	=> {soda}	0.011286223	0.1913793	0.058973055
## [434]	{frankfurter}	=> {yogurt}	0.011184545	0.1896552	0.058973055
## [435]	{frankfurter}	=> {rolls/buns}	0.019217082	0.3258621	0.058973055
## [436]	{rolls/buns}	=> {frankfurter}	0.019217082	0.1044776	0.183934926
## [437]	{frankfurter}	=> {other vegetables}	0.016471784	0.2793103	0.058973055
## [438]	{frankfurter}	=> {whole milk}	0.020538892	0.3482759	0.058973055
## [439]	{margarine}	=> {bottled beer}	0.006100661	0.1041667	0.058566345
## [440]	{butter}	=> {bottled beer}	0.005795628	0.1045872	0.055414337
## [441]	{bottled beer}	=> {bottled water}	0.015760041	0.1957071	0.080528724
## [442]	{bottled water}	=> {bottled beer}	0.015760041	0.1425943	0.110523640
## [443]	{bottled beer}	=> {tropical fruit}	0.008235892	0.1022727	0.080528724
## [444]	{bottled beer}	=> {root vegetables}	0.009659380	0.1199495	0.080528724

## [445]	{bottled beer}	=> {soda}	0.016980173	0.2108586	0.080528724
## [446]	{bottled beer}	=> {yogurt}	0.009252669	0.1148990	0.080528724
## [447]	{bottled beer}	=> {rolls/buns}	0.013624809	0.1691919	0.080528724
## [448]	{bottled beer}	=> {other vegetables}	0.016166751	0.2007576	0.080528724
## [449]	{bottled beer}	=> {whole milk}	0.020437214	0.2537879	0.080528724
## [450]	{brown bread}	=> {margarine}	0.006507372	0.1003135	0.064870361
## [451]	{margarine}	=> {brown bread}	0.006507372	0.1111111	0.058566345
## [452]	{butter}	=> {brown bread}	0.005795628	0.1045872	0.055414337
## [453]	{brown bread}	=> {newspapers}	0.007625826	0.1175549	0.064870361
## [454]	{brown bread}	=> {domestic eggs}	0.006812405	0.1050157	0.064870361
## [455]	{domestic eggs}	=> {brown bread}	0.006812405	0.1073718	0.063446873
## [456]	{brown bread}	=> {fruit/vegetable juice}	0.008337570	0.1285266	0.064870361
## [457]	{fruit/vegetable juice}	=> {brown bread}	0.008337570	0.1153305	0.072292832
## [458]	{brown bread}	=> {pip fruit}	0.007625826	0.1175549	0.064870361
## [459]	{pip fruit}	=> {brown bread}	0.007625826	0.1008065	0.075648195
## [460]	{brown bread}	=> {pastry}	0.009659380	0.1489028	0.064870361
## [461]	{pastry}	=> {brown bread}	0.009659380	0.1085714	0.088967972
## [462]	{brown bread}	=> {citrus fruit}	0.008337570	0.1285266	0.064870361
## [463]	{citrus fruit}	=> {brown bread}	0.008337570	0.1007371	0.082765633
## [464]	{brown bread}	=> {shopping bags}	0.009252669	0.1426332	0.064870361
## [465]	{brown bread}	=> {sausage}	0.010676157	0.1645768	0.064870361
## [466]	{sausage}	=> {brown bread}	0.010676157	0.1136364	0.093950178
## [467]	{brown bread}	=> {bottled water}	0.008235892	0.1269592	0.064870361
## [468]	{brown bread}	=> {tropical fruit}	0.010676157	0.1645768	0.064870361
## [469]	{tropical fruit}	=> {brown bread}	0.010676157	0.1017442	0.104931368
## [470]	{brown bread}	=> {root vegetables}	0.010167768	0.1567398	0.064870361
## [471]	{brown bread}	=> {soda}	0.012608033	0.1943574	0.064870361
## [472]	{brown bread}	=> {yogurt}	0.014539908	0.2241379	0.064870361
## [473]	{yogurt}	=> {brown bread}	0.014539908	0.1042274	0.139501779
## [474]	{brown bread}	=> {rolls/buns}	0.012608033	0.1943574	0.064870361
## [475]	{brown bread}	=> {other vegetables}	0.018708693	0.2884013	0.064870361
## [476]	{brown bread}	=> {whole milk}	0.025216065	0.3887147	0.064870361
## [477]	{margarine}	=> {butter}	0.006710727	0.1145833	0.058566345
## [478]	{butter}	=> {margarine}	0.006710727	0.1211009	0.055414337
## [479]	{margarine}	=> {newspapers}	0.007117438	0.1215278	0.058566345
## [480]	{margarine}	=> {domestic eggs}	0.008337570	0.1423611	0.058566345
## [481]	{domestic eggs}	=> {margarine}	0.008337570	0.1314103	0.063446873
## [482]	{margarine}	=> {fruit/vegetable juice}	0.006202339	0.1059028	0.058566345
## [483]	{margarine}	=> {whipped/sour cream}	0.006812405	0.1163194	0.058566345
## [484]	{margarine}	=> {pip fruit}	0.008540925	0.1458333	0.058566345
## [485]	{pip fruit}	=> {margarine}	0.008540925	0.1129032	0.075648195
## [486]	{margarine}	=> {pastry}	0.006812405	0.1163194	0.058566345
## [487]	{margarine}	=> {citrus fruit}	0.007930859	0.1354167	0.058566345
## [488]	{margarine}	=> {sausage}	0.007117438	0.1215278	0.058566345
## [489]	{margarine}	=> {bottled water}	0.010269446	0.1753472	0.058566345
## [490]	{margarine}	=> {tropical fruit}	0.009354347	0.1597222	0.058566345
## [491]	{margarine}	=> {root vegetables}	0.011082867	0.1892361	0.058566345
## [492]	{root vegetables}	=> {margarine}	0.011082867	0.1016791	0.108998475
## [493]	{margarine}	=> {soda}	0.010167768	0.1736111	0.058566345
## [494]	{margarine}	=> {yogurt}	0.014234875	0.2430556	0.058566345
## [495]	{yogurt}	=> {margarine}	0.014234875	0.1020408	0.139501779
## [496]	{margarine}	=> {rolls/buns}	0.014743264	0.2517361	0.058566345
## [497]	{margarine}	=> {other vegetables}	0.019725470	0.3368056	0.058566345
## [498]	{other vegetables}	=> {margarine}	0.019725470	0.1019443	0.193492628

## [499]	{margarine}	=> {whole milk}	0.024199288	0.4131944	0.058566345
## [500]	{butter}	=> {newspapers}	0.005795628	0.1045872	0.055414337
## [501]	{butter}	=> {domestic eggs}	0.009659380	0.1743119	0.055414337
## [502]	{domestic eggs}	=> {butter}	0.009659380	0.1522436	0.063446873
## [503]	{butter}	=> {fruit/vegetable juice}	0.008032537	0.1449541	0.055414337
## [504]	{fruit/vegetable juice}	=> {butter}	0.008032537	0.1111111	0.072292832
## [505]	{butter}	=> {whipped/sour cream}	0.010167768	0.1834862	0.055414337
## [506]	{whipped/sour cream}	=> {butter}	0.010167768	0.1418440	0.071682766
## [507]	{butter}	=> {pip fruit}	0.007320793	0.1321101	0.055414337
## [508]	{butter}	=> {pastry}	0.007625826	0.1376147	0.055414337
## [509]	{butter}	=> {citrus fruit}	0.009150991	0.1651376	0.055414337
## [510]	{citrus fruit}	=> {butter}	0.009150991	0.1105651	0.082765633
## [511]	{butter}	=> {sausage}	0.008642603	0.1559633	0.055414337
## [512]	{butter}	=> {bottled water}	0.008947636	0.1614679	0.055414337
## [513]	{butter}	=> {tropical fruit}	0.009964413	0.1798165	0.055414337
## [514]	{butter}	=> {root vegetables}	0.012913066	0.2330275	0.055414337
## [515]	{root vegetables}	=> {butter}	0.012913066	0.1184701	0.108998475
## [516]	{butter}	=> {soda}	0.008845958	0.1596330	0.055414337
## [517]	{butter}	=> {yogurt}	0.014641586	0.2642202	0.055414337
## [518]	{yogurt}	=> {butter}	0.014641586	0.1049563	0.139501779
## [519]	{butter}	=> {rolls/buns}	0.013421454	0.2422018	0.055414337
## [520]	{butter}	=> {other vegetables}	0.020030503	0.3614679	0.055414337
## [521]	{other vegetables}	=> {butter}	0.020030503	0.1035208	0.193492628
## [522]	{butter}	=> {whole milk}	0.027554652	0.4972477	0.055414337
## [523]	{whole milk}	=> {butter}	0.027554652	0.1078392	0.255516014
## [524]	{domestic eggs}	=> {newspapers}	0.006914082	0.1089744	0.063446873
## [525]	{newspapers}	=> {fruit/vegetable juice}	0.008235892	0.1031847	0.079816980
## [526]	{fruit/vegetable juice}	=> {newspapers}	0.008235892	0.1139241	0.072292832
## [527]	{whipped/sour cream}	=> {newspapers}	0.007219115	0.1007092	0.071682766
## [528]	{newspapers}	=> {pastry}	0.008439248	0.1057325	0.079816980
## [529]	{newspapers}	=> {citrus fruit}	0.008337570	0.1044586	0.079816980
## [530]	{citrus fruit}	=> {newspapers}	0.008337570	0.1007371	0.082765633
## [531]	{newspapers}	=> {sausage}	0.008032537	0.1006369	0.079816980
## [532]	{newspapers}	=> {bottled water}	0.011286223	0.1414013	0.079816980
## [533]	{bottled water}	=> {newspapers}	0.011286223	0.1021159	0.110523640
## [534]	{newspapers}	=> {tropical fruit}	0.011794611	0.1477707	0.079816980
## [535]	{tropical fruit}	=> {newspapers}	0.011794611	0.1124031	0.104931368
## [536]	{newspapers}	=> {root vegetables}	0.011489578	0.1439490	0.079816980
## [537]	{root vegetables}	=> {newspapers}	0.011489578	0.1054104	0.108998475
## [538]	{newspapers}	=> {soda}	0.014641586	0.1834395	0.079816980
## [539]	{newspapers}	=> {yogurt}	0.015353330	0.1923567	0.079816980
## [540]	{yogurt}	=> {newspapers}	0.015353330	0.1100583	0.139501779
## [541]	{newspapers}	=> {rolls/buns}	0.019725470	0.2471338	0.079816980
## [542]	{rolls/buns}	=> {newspapers}	0.019725470	0.1072416	0.183934926
## [543]	{newspapers}	=> {other vegetables}	0.019318760	0.2420382	0.079816980
## [544]	{newspapers}	=> {whole milk}	0.027351296	0.3426752	0.079816980
## [545]	{whole milk}	=> {newspapers}	0.027351296	0.1070434	0.255516014
## [546]	{domestic eggs}	=> {fruit/vegetable juice}	0.008032537	0.1266026	0.063446873
## [547]	{fruit/vegetable juice}	=> {domestic eggs}	0.008032537	0.1111111	0.072292832
## [548]	{domestic eggs}	=> {whipped/sour cream}	0.009964413	0.1570513	0.063446873
## [549]	{whipped/sour cream}	=> {domestic eggs}	0.009964413	0.1390071	0.071682766
## [550]	{domestic eggs}	=> {pip fruit}	0.008642603	0.1362179	0.063446873
## [551]	{pip fruit}	=> {domestic eggs}	0.008642603	0.1142473	0.075648195
## [552]	{domestic eggs}	=> {pastry}	0.009049314	0.1426282	0.063446873

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## [553] {pastry}                                     => {domestic eggs}          0.009049314  0.1017143  0.088967972
## [554] {domestic eggs}                           => {citrus fruit}          0.010371124  0.1634615  0.063446873
## [555] {citrus fruit}                            => {domestic eggs}          0.010371124  0.1253071  0.082765633
## [556] {domestic eggs}                           => {shopping bags}          0.009049314  0.1426282  0.063446873
## [557] {domestic eggs}                           => {sausage}                0.009557702  0.1506410  0.063446873
## [558] {sausage}                                => {domestic eggs}          0.009557702  0.1017316  0.093950178
## [559] {domestic eggs}                           => {bottled water}          0.009150991  0.1442308  0.063446873
## [560] {domestic eggs}                           => {tropical fruit}         0.011387900  0.1794872  0.063446873
## [561] {tropical fruit}                          => {domestic eggs}          0.011387900  0.1085271  0.104931368
## [562] {domestic eggs}                           => {root vegetables}        0.014336553  0.2259615  0.063446873
## [563] {root vegetables}                         => {domestic eggs}          0.014336553  0.1315299  0.108998475
## [564] {domestic eggs}                           => {soda}                   0.012404677  0.1955128  0.063446873
## [565] {domestic eggs}                           => {yogurt}                 0.014336553  0.2259615  0.063446873
## [566] {yogurt}                                 => {domestic eggs}          0.014336553  0.1027697  0.139501779
## [567] {domestic eggs}                           => {rolls/buns}             0.015658363  0.2467949  0.063446873
## [568] {domestic eggs}                           => {other vegetables}       0.022267412  0.3509615  0.063446873
## [569] {other vegetables}                      => {domestic eggs}          0.022267412  0.1150815  0.193492628
## [570] {domestic eggs}                           => {whole milk}              0.029994916  0.4727564  0.063446873
## [571] {whole milk}                             => {domestic eggs}          0.029994916  0.1173896  0.255516014
## [572] {fruit/vegetable juice}                  => {whipped/sour cream}     0.009049314  0.1251758  0.072292832
## [573] {whipped/sour cream}                     => {fruit/vegetable juice}  0.009049314  0.1262411  0.071682766
## [574] {fruit/vegetable juice}                  => {pip fruit}              0.009557702  0.1322082  0.072292832
## [575] {pip fruit}                             => {fruit/vegetable juice}  0.009557702  0.1263441  0.075648195
## [576] {fruit/vegetable juice}                  => {pastry}                 0.008540925  0.1181435  0.072292832
## [577] {fruit/vegetable juice}                  => {citrus fruit}           0.010371124  0.1434599  0.072292832
## [578] {citrus fruit}                           => {fruit/vegetable juice}  0.010371124  0.1253071  0.082765633
## [579] {fruit/vegetable juice}                  => {shopping bags}          0.010676157  0.1476793  0.072292832
## [580] {shopping bags}                          => {fruit/vegetable juice}  0.010676157  0.1083591  0.098525674
## [581] {fruit/vegetable juice}                  => {sausage}                0.010066090  0.1392405  0.072292832
## [582] {sausage}                               => {fruit/vegetable juice}  0.010066090  0.1071429  0.093950178
## [583] {fruit/vegetable juice}                  => {bottled water}          0.014234875  0.1969058  0.072292832
## [584] {bottled water}                          => {fruit/vegetable juice}  0.014234875  0.1287948  0.110523640
## [585] {fruit/vegetable juice}                  => {tropical fruit}         0.013726487  0.1898734  0.072292832
## [586] {tropical fruit}                         => {fruit/vegetable juice}  0.013726487  0.1308140  0.104931368
## [587] {fruit/vegetable juice}                  => {root vegetables}        0.011997966  0.1659634  0.072292832
## [588] {root vegetables}                       => {fruit/vegetable juice}  0.011997966  0.1100746  0.108998475
## [589] {fruit/vegetable juice}                  => {soda}                   0.018403660  0.2545710  0.072292832
## [590] {soda}                                  => {fruit/vegetable juice}  0.018403660  0.1055394  0.174377224
## [591] {fruit/vegetable juice}                  => {yogurt}                 0.018708693  0.2587904  0.072292832
## [592] {yogurt}                                => {fruit/vegetable juice}  0.018708693  0.1341108  0.139501779
## [593] {fruit/vegetable juice}                  => {rolls/buns}             0.014539908  0.2011252  0.072292832
## [594] {fruit/vegetable juice}                  => {other vegetables}       0.021047280  0.2911392  0.072292832
## [595] {other vegetables}                     => {fruit/vegetable juice}  0.021047280  0.1087756  0.193492628
## [596] {fruit/vegetable juice}                  => {whole milk}              0.026639553  0.3684951  0.072292832
## [597] {whole milk}                            => {fruit/vegetable juice}  0.026639553  0.1042579  0.255516014
## [598] {whipped/sour cream}                    => {pip fruit}              0.009252669  0.1290780  0.071682766
## [599] {pip fruit}                            => {whipped/sour cream}     0.009252669  0.1223118  0.075648195
## [600] {whipped/sour cream}                    => {pastry}                 0.007524148  0.1049645  0.071682766
## [601] {whipped/sour cream}                    => {citrus fruit}            0.010879512  0.1517730  0.071682766
## [602] {citrus fruit}                          => {whipped/sour cream}     0.010879512  0.1314496  0.082765633
## [603] {whipped/sour cream}                    => {shopping bags}          0.007930859  0.1106383  0.071682766
## [604] {whipped/sour cream}                    => {sausage}                0.009049314  0.1262411  0.071682766
## [605] {whipped/sour cream}                    => {bottled water}          0.008744281  0.1219858  0.071682766
## [606] {whipped/sour cream}                    => {tropical fruit}         0.013828165  0.1929078  0.071682766

```

## [607]	{tropical fruit}	=> {whipped/sour cream}	0.013828165	0.1317829	0.104931368
## [608]	{whipped/sour cream}	=> {root vegetables}	0.017081851	0.2382979	0.071682766
## [609]	{root vegetables}	=> {whipped/sour cream}	0.017081851	0.1567164	0.108998475
## [610]	{whipped/sour cream}	=> {soda}	0.011591256	0.1617021	0.071682766
## [611]	{whipped/sour cream}	=> {yogurt}	0.020742247	0.2893617	0.071682766
## [612]	{yogurt}	=> {whipped/sour cream}	0.020742247	0.1486880	0.139501779
## [613]	{whipped/sour cream}	=> {rolls/buns}	0.014641586	0.2042553	0.071682766
## [614]	{whipped/sour cream}	=> {other vegetables}	0.028876462	0.4028369	0.071682766
## [615]	{other vegetables}	=> {whipped/sour cream}	0.028876462	0.1492380	0.193492628
## [616]	{whipped/sour cream}	=> {whole milk}	0.032231825	0.4496454	0.071682766
## [617]	{whole milk}	=> {whipped/sour cream}	0.032231825	0.1261441	0.255516014
## [618]	{pip fruit}	=> {pastry}	0.010676157	0.1411290	0.075648195
## [619]	{pastry}	=> {pip fruit}	0.010676157	0.1200000	0.088967972
## [620]	{pip fruit}	=> {citrus fruit}	0.013828165	0.1827957	0.075648195
## [621]	{citrus fruit}	=> {pip fruit}	0.013828165	0.1670762	0.082765633
## [622]	{pip fruit}	=> {shopping bags}	0.009354347	0.1236559	0.075648195
## [623]	{pip fruit}	=> {sausage}	0.010777834	0.1424731	0.075648195
## [624]	{sausage}	=> {pip fruit}	0.010777834	0.1147186	0.093950178
## [625]	{pip fruit}	=> {bottled water}	0.010574479	0.1397849	0.075648195
## [626]	{pip fruit}	=> {tropical fruit}	0.020437214	0.2701613	0.075648195
## [627]	{tropical fruit}	=> {pip fruit}	0.020437214	0.1947674	0.104931368
## [628]	{pip fruit}	=> {root vegetables}	0.015556685	0.2056452	0.075648195
## [629]	{root vegetables}	=> {pip fruit}	0.015556685	0.1427239	0.108998475
## [630]	{pip fruit}	=> {soda}	0.013319776	0.1760753	0.075648195
## [631]	{pip fruit}	=> {yogurt}	0.017996950	0.2379032	0.075648195
## [632]	{yogurt}	=> {pip fruit}	0.017996950	0.1290087	0.139501779
## [633]	{pip fruit}	=> {rolls/buns}	0.013929842	0.1841398	0.075648195
## [634]	{pip fruit}	=> {other vegetables}	0.026131164	0.3454301	0.075648195
## [635]	{other vegetables}	=> {pip fruit}	0.026131164	0.1350499	0.193492628
## [636]	{pip fruit}	=> {whole milk}	0.030096594	0.3978495	0.075648195
## [637]	{whole milk}	=> {pip fruit}	0.030096594	0.1177875	0.255516014
## [638]	{pastry}	=> {citrus fruit}	0.009761057	0.1097143	0.088967972
## [639]	{citrus fruit}	=> {pastry}	0.009761057	0.1179361	0.082765633
## [640]	{pastry}	=> {shopping bags}	0.011896289	0.1337143	0.088967972
## [641]	{shopping bags}	=> {pastry}	0.011896289	0.1207430	0.098525674
## [642]	{pastry}	=> {sausage}	0.012506355	0.1405714	0.088967972
## [643]	{sausage}	=> {pastry}	0.012506355	0.1331169	0.093950178
## [644]	{pastry}	=> {bottled water}	0.008947636	0.1005714	0.088967972
## [645]	{pastry}	=> {tropical fruit}	0.013218099	0.1485714	0.088967972
## [646]	{tropical fruit}	=> {pastry}	0.013218099	0.1259690	0.104931368
## [647]	{pastry}	=> {root vegetables}	0.010981190	0.1234286	0.088967972
## [648]	{root vegetables}	=> {pastry}	0.010981190	0.1007463	0.108998475
## [649]	{pastry}	=> {soda}	0.021047280	0.2365714	0.088967972
## [650]	{soda}	=> {pastry}	0.021047280	0.1206997	0.174377224
## [651]	{pastry}	=> {yogurt}	0.017691917	0.1988571	0.088967972
## [652]	{yogurt}	=> {pastry}	0.017691917	0.1268222	0.139501779
## [653]	{pastry}	=> {rolls/buns}	0.020945602	0.2354286	0.088967972
## [654]	{rolls/buns}	=> {pastry}	0.020945602	0.1138751	0.183934926
## [655]	{pastry}	=> {other vegetables}	0.022572445	0.2537143	0.088967972
## [656]	{other vegetables}	=> {pastry}	0.022572445	0.1166579	0.193492628
## [657]	{pastry}	=> {whole milk}	0.033248602	0.3737143	0.088967972
## [658]	{whole milk}	=> {pastry}	0.033248602	0.1301234	0.255516014
## [659]	{citrus fruit}	=> {shopping bags}	0.009761057	0.1179361	0.082765633
## [660]	{citrus fruit}	=> {sausage}	0.011286223	0.1363636	0.082765633

## [661]	{sausage}	=> {citrus fruit}	0.011286223	0.1201299	0.093950178
## [662]	{citrus fruit}	=> {bottled water}	0.013523132	0.1633907	0.082765633
## [663]	{bottled water}	=> {citrus fruit}	0.013523132	0.1223551	0.110523640
## [664]	{citrus fruit}	=> {tropical fruit}	0.019928826	0.2407862	0.082765633
## [665]	{tropical fruit}	=> {citrus fruit}	0.019928826	0.1899225	0.104931368
## [666]	{citrus fruit}	=> {root vegetables}	0.017691917	0.2137592	0.082765633
## [667]	{root vegetables}	=> {citrus fruit}	0.017691917	0.1623134	0.108998475
## [668]	{citrus fruit}	=> {soda}	0.012811388	0.1547912	0.082765633
## [669]	{citrus fruit}	=> {yogurt}	0.021657346	0.2616708	0.082765633
## [670]	{yogurt}	=> {citrus fruit}	0.021657346	0.1552478	0.139501779
## [671]	{citrus fruit}	=> {rolls/buns}	0.016776817	0.2027027	0.082765633
## [672]	{citrus fruit}	=> {other vegetables}	0.028876462	0.3488943	0.082765633
## [673]	{other vegetables}	=> {citrus fruit}	0.028876462	0.1492380	0.193492628
## [674]	{citrus fruit}	=> {whole milk}	0.030503305	0.3685504	0.082765633
## [675]	{whole milk}	=> {citrus fruit}	0.030503305	0.1193792	0.255516014
## [676]	{shopping bags}	=> {sausage}	0.015658363	0.1589267	0.098525674
## [677]	{sausage}	=> {shopping bags}	0.015658363	0.1666667	0.093950178
## [678]	{shopping bags}	=> {bottled water}	0.010981190	0.1114551	0.098525674
## [679]	{shopping bags}	=> {tropical fruit}	0.013523132	0.1372549	0.098525674
## [680]	{tropical fruit}	=> {shopping bags}	0.013523132	0.1288760	0.104931368
## [681]	{shopping bags}	=> {root vegetables}	0.012811388	0.1300310	0.098525674
## [682]	{root vegetables}	=> {shopping bags}	0.012811388	0.1175373	0.108998475
## [683]	{shopping bags}	=> {soda}	0.024605999	0.2497420	0.098525674
## [684]	{soda}	=> {shopping bags}	0.024605999	0.1411079	0.174377224
## [685]	{shopping bags}	=> {yogurt}	0.015251652	0.1547988	0.098525674
## [686]	{yogurt}	=> {shopping bags}	0.015251652	0.1093294	0.139501779
## [687]	{shopping bags}	=> {rolls/buns}	0.019522115	0.1981424	0.098525674
## [688]	{rolls/buns}	=> {shopping bags}	0.019522115	0.1061360	0.183934926
## [689]	{shopping bags}	=> {other vegetables}	0.023182511	0.2352941	0.098525674
## [690]	{other vegetables}	=> {shopping bags}	0.023182511	0.1198108	0.193492628
## [691]	{shopping bags}	=> {whole milk}	0.024504321	0.2487100	0.098525674
## [692]	{sausage}	=> {bottled water}	0.011997966	0.1277056	0.093950178
## [693]	{bottled water}	=> {sausage}	0.011997966	0.1085557	0.110523640
## [694]	{sausage}	=> {tropical fruit}	0.013929842	0.1482684	0.093950178
## [695]	{tropical fruit}	=> {sausage}	0.013929842	0.1327519	0.104931368
## [696]	{sausage}	=> {root vegetables}	0.014946619	0.1590909	0.093950178
## [697]	{root vegetables}	=> {sausage}	0.014946619	0.1371269	0.108998475
## [698]	{sausage}	=> {soda}	0.024300966	0.2586580	0.093950178
## [699]	{soda}	=> {sausage}	0.024300966	0.1393586	0.174377224
## [700]	{sausage}	=> {yogurt}	0.019623793	0.2088745	0.093950178
## [701]	{yogurt}	=> {sausage}	0.019623793	0.1406706	0.139501779
## [702]	{sausage}	=> {rolls/buns}	0.030604982	0.3257576	0.093950178
## [703]	{rolls/buns}	=> {sausage}	0.030604982	0.1663903	0.183934926
## [704]	{sausage}	=> {other vegetables}	0.026944586	0.2867965	0.093950178
## [705]	{other vegetables}	=> {sausage}	0.026944586	0.1392538	0.193492628
## [706]	{sausage}	=> {whole milk}	0.029893238	0.3181818	0.093950178
## [707]	{whole milk}	=> {sausage}	0.029893238	0.1169916	0.255516014
## [708]	{bottled water}	=> {tropical fruit}	0.018505338	0.1674333	0.110523640
## [709]	{tropical fruit}	=> {bottled water}	0.018505338	0.1763566	0.104931368
## [710]	{bottled water}	=> {root vegetables}	0.015658363	0.1416743	0.110523640
## [711]	{root vegetables}	=> {bottled water}	0.015658363	0.1436567	0.108998475
## [712]	{bottled water}	=> {soda}	0.028978139	0.2621895	0.110523640
## [713]	{soda}	=> {bottled water}	0.028978139	0.1661808	0.174377224
## [714]	{bottled water}	=> {yogurt}	0.022979156	0.2079117	0.110523640

```

## [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}
## [747] {rolls/buns}
## [748] {soda}
## [749] {other vegetables}
## [750] {soda}
## [751] {whole milk}
## [752] {yogurt}
## [753] {rolls/buns}
## [754] {yogurt}
## [755] {other vegetables}
## [756] {yogurt}
## [757] {whole milk}
## [758] {rolls/buns}
## [759] {other vegetables}
## [760] {rolls/buns}
## [761] {whole milk}
## [762] {other vegetables}
## [763] {whole milk}
## [764] {oil,
##       other vegetables}
## [765] {oil,
##       whole milk}
## [766] {onions,
##       whole vegetables}

=> {bottled water} 0.022979156 0.1647230 0.139501779
=> {rolls/buns} 0.024199288 0.2189512 0.110523640
=> {bottled water} 0.024199288 0.1315644 0.183934926
=> {other vegetables} 0.024809354 0.2244710 0.110523640
=> {bottled water} 0.024809354 0.1282186 0.193492628
=> {whole milk} 0.034367056 0.3109476 0.110523640
=> {bottled water} 0.034367056 0.1345006 0.255516014
=> {root vegetables} 0.021047280 0.2005814 0.104931368
=> {tropical fruit} 0.021047280 0.1930970 0.108998475
=> {soda} 0.020843925 0.1986434 0.104931368
=> {tropical fruit} 0.020843925 0.1195335 0.174377224
=> {yogurt} 0.029283172 0.2790698 0.104931368
=> {tropical fruit} 0.029283172 0.2099125 0.139501779
=> {rolls/buns} 0.024605999 0.2344961 0.104931368
=> {tropical fruit} 0.024605999 0.1337756 0.183934926
=> {other vegetables} 0.035892222 0.3420543 0.104931368
=> {tropical fruit} 0.035892222 0.1854966 0.193492628
=> {whole milk} 0.042297916 0.4031008 0.104931368
=> {tropical fruit} 0.042297916 0.1655392 0.255516014
=> {soda} 0.018607016 0.1707090 0.108998475
=> {root vegetables} 0.018607016 0.1067055 0.174377224
=> {yogurt} 0.025826131 0.2369403 0.108998475
=> {root vegetables} 0.025826131 0.1851312 0.139501779
=> {rolls/buns} 0.024300966 0.2229478 0.108998475
=> {root vegetables} 0.024300966 0.1321172 0.183934926
=> {other vegetables} 0.047381800 0.4347015 0.108998475
=> {root vegetables} 0.047381800 0.2448765 0.193492628
=> {whole milk} 0.048906965 0.4486940 0.108998475
=> {root vegetables} 0.048906965 0.1914047 0.255516014
=> {yogurt} 0.027351296 0.1568513 0.174377224
=> {soda} 0.027351296 0.1960641 0.139501779
=> {rolls/buns} 0.038332486 0.2198251 0.174377224
=> {soda} 0.038332486 0.2084024 0.183934926
=> {other vegetables} 0.032740214 0.1877551 0.174377224
=> {soda} 0.032740214 0.1692065 0.193492628
=> {whole milk} 0.040061007 0.2297376 0.174377224
=> {soda} 0.040061007 0.1567847 0.255516014
=> {rolls/buns} 0.034367056 0.2463557 0.139501779
=> {yogurt} 0.034367056 0.1868436 0.183934926
=> {other vegetables} 0.043416370 0.3112245 0.139501779
=> {yogurt} 0.043416370 0.2243826 0.193492628
=> {whole milk} 0.056024403 0.4016035 0.139501779
=> {yogurt} 0.056024403 0.2192598 0.255516014
=> {other vegetables} 0.042602949 0.2316197 0.183934926
=> {rolls/buns} 0.042602949 0.2201787 0.193492628
=> {whole milk} 0.056634469 0.3079049 0.183934926
=> {rolls/buns} 0.056634469 0.2216474 0.255516014
=> {whole milk} 0.074834774 0.3867578 0.193492628
=> {other vegetables} 0.074834774 0.2928770 0.255516014
=> {whole milk} 0.005083884 0.5102041 0.009964413
=> {other vegetables} 0.005083884 0.4504505 0.011286223

```

##	root vegetables}	=> {other vegetables}	0.005693950	0.6021505	0.009456024
## [767]	{onions,	=> {root vegetables}	0.005693950	0.4000000	0.014234875
##	other vegetables}	=> {onions}	0.005693950	0.1201717	0.047381800
## [768]	{other vegetables,	=> {whole milk}	0.006609049	0.4642857	0.014234875
##	root vegetables}	=> {other vegetables}	0.006609049	0.5462185	0.012099644
## [769]	{onions,	=> {whole milk}	0.006304016	0.4558824	0.013828165
##	other vegetables}	=> {other vegetables}	0.006304016	0.4275862	0.014743264
## [770]	{onions,	=> {whole milk}	0.005185562	0.5425532	0.009557702
##	whole milk}	=> {other vegetables}	0.005185562	0.4047619	0.012811388
## [771]	{hamburger meat,	=> {whole milk}	0.006304016	0.5849057	0.010777834
##	other vegetables}	=> {other vegetables}	0.006304016	0.4189189	0.015048297
## [772]	{hamburger meat,	=> {whole milk}	0.005693950	0.5333333	0.010676157
##	whole milk}	=> {other vegetables}	0.005693950	0.4210526	0.013523132
## [773]	{hygiene articles,	=> {whole milk}	0.005287239	0.4262295	0.012404677
##	other vegetables}	=> {other vegetables}	0.005287239	0.3851852	0.013726487
## [774]	{hygiene articles,	=> {cream cheese }	0.005287239	0.1217799	0.043416370
##	whole milk}	=> {yogurt}	0.006609049	0.5327869	0.012404677
## [775]	{other vegetables,	=> {whole milk}	0.006609049	0.4012346	0.016471784
##	sugar}	=> {yogurt}	0.006609049	0.1179673	0.056024403
## [776]	{sugar,	=> {cream cheese }	0.006710727	0.4888889	0.013726487
##	whole milk}	=> {whole milk}	0.006710727	0.4074074	0.016471784
## [777]	{long life bakery product,	=> {other vegetables}	0.005693950	0.5233645	0.010879512
##	other vegetables}	=> {other vegetables}	0.005693950	0.3181818	0.017895272
## [778]	{long life bakery product,	=> {chicken}	0.005693950	0.1201717	0.047381800
##	whole milk}	=> {whole milk}	0.005998983	0.5514019	0.010879512
## [779]	{cream cheese ,	=> {root vegetables}	0.005998983	0.3410405	0.017590239
##	yogurt}	=> {other vegetables}	0.005998983	0.1226611	0.048906965
## [780]	{cream cheese ,	=> {whole milk}			
##	other vegetables}	=> {yogurt}			
## [781]	{other vegetables,	=> {cream cheese }			
##	yogurt}	=> {whole milk}			
## [782]	{cream cheese ,	=> {yogurt}			
##	yogurt}	=> {cream cheese }			
## [783]	{cream cheese ,	=> {whole milk}			
##	whole milk}	=> {yogurt}			
## [784]	{whole milk,	=> {cream cheese }			
##	yogurt}	=> {whole milk}			
## [785]	{cream cheese ,	=> {yogurt}			
##	other vegetables}	=> {cream cheese }			
## [786]	{cream cheese ,	=> {root vegetables}			
##	whole milk}	=> {other vegetables}			
## [787]	{chicken,	=> {other vegetables}			
##	root vegetables}	=> {whole milk}			
## [788]	{chicken,	=> {root vegetables}			
##	other vegetables}	=> {chicken}			
## [789]	{other vegetables,	=> {whole milk}			
##	root vegetables}	=> {root vegetables}			
## [790]	{chicken,	=> {chicken}			
##	root vegetables}	=> {root vegetables}			
## [791]	{chicken,	=> {chicken}			
##	whole milk}	=> {root vegetables}			
## [792]	{root vegetables,	=> {chicken}			
##	whole milk}	=> {chicken}			
## [793]	{chicken,				

##	rolls/buns}	=> {whole milk}	0.005287239	0.5473684	0.009659380
## [794]	{chicken,	=> {rolls/buns}	0.005287239	0.3005780	0.017590239
##	whole milk}	=> {whole milk}	0.008439248	0.4715909	0.017895272
## [795]	{chicken,	=> {other vegetables}	0.008439248	0.4797688	0.017590239
##	other vegetables}	=> {whole milk}	0.008439248	0.1127717	0.074834774
## [796]	{chicken,	=> {other vegetables}	0.005897306	0.4296296	0.013726487
##	whole milk}	=> {chicken}	0.005083884	0.3759398	0.013523132
## [797]	{other vegetables,	=> {whole milk}	0.005083884	0.005490595	0.017081851
##	whole milk}	=> {other vegetables}	0.005083884	0.3048780	0.016675140
## [798]	{other vegetables,	=> {whole milk}	0.005083884	0.1269036	0.040061007
##	white bread}	=> {other vegetables}	0.005083884	0.005490595	0.4320000
## [799]	{white bread,	=> {whole milk}	0.005083884	0.3292683	0.016675140
##	whole milk}	=> {other vegetables}	0.005083884	0.005083884	0.5208333
## [800]	{chocolate,	=> {whole milk}	0.005083884	0.2717391	0.018708693
##	soda}	=> {chocolate}	0.006405694	0.4772727	0.013421454
## [801]	{chocolate,	=> {whole milk}	0.006405694	0.3423913	0.018708693
##	whole milk}	=> {whole milk}	0.006100661	0.5263158	0.011591256
## [802]	{soda,	=> {yogurt}	0.006100661	0.3428571	0.017793594
##	whole milk}	=> {whole milk}	0.006100661	0.1287554	0.047381800
## [803]	{chocolate,	=> {other vegetables}	0.006100661	0.006202339	0.5350877
##	other vegetables}	=> {other vegetables}	0.006100661	0.005287239	0.011591256
## [804]	{chocolate,	=> {root vegetables}	0.006100661	0.1268191	0.048906965
##	whole milk}	=> {frozen vegetables}	0.006100661	0.005287239	0.4262295
## [805]	{coffee,	=> {other vegetables}	0.006100661	0.005287239	0.012404677
##	yogurt}	=> {whole milk}	0.006100661	0.005287239	0.2971429
## [806]	{coffee,	=> {yogurt}	0.006100661	0.005287239	0.17793594
##	whole milk}	=> {whole milk}	0.006100661	0.005287239	0.1217799
## [807]	{coffee,	=> {root vegetables}	0.006100661	0.006100661	0.4918033
##	other vegetables}	=> {frozen vegetables}	0.006100661	0.006100661	0.2985075
## [808]	{coffee,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	whole milk}	=> {other vegetables}	0.006100661	0.006100661	0.020437214
## [809]	{frozen vegetables,	=> {other vegetables}	0.006100661	0.006100661	0.020437214
##	root vegetables}	=> {root vegetables}	0.006100661	0.006100661	0.020437214
## [810]	{frozen vegetables,	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
##	other vegetables}	=> {whole milk}	0.006100661	0.006100661	0.020437214
## [811]	{other vegetables,	=> {root vegetables}	0.006100661	0.006100661	0.020437214
##	root vegetables}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [812]	{other vegetables,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	root vegetables}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [813]	{frozen vegetables,	=> {root vegetables}	0.006100661	0.006100661	0.020437214
##	whole milk}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [814]	{root vegetables,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	whole milk}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [815]	{frozen vegetables,	=> {other vegetables}	0.006100661	0.006100661	0.020437214
##	yogurt}	=> {whole milk}	0.006100661	0.006100661	0.020437214
## [816]	{frozen vegetables,	=> {yogurt}	0.006100661	0.006100661	0.020437214
##	other vegetables}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [817]	{other vegetables,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	yogurt}	=> {frozen vegetables}	0.006100661	0.006100661	0.020437214
## [818]	{frozen vegetables,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	yogurt}	=> {yogurt}	0.006100661	0.006100661	0.020437214
## [819]	{frozen vegetables,	=> {whole milk}	0.006100661	0.006100661	0.020437214
##	whole milk}	=> {yogurt}	0.006100661	0.006100661	0.020437214
## [820]	{whole milk,				

##	yogurt}	=> {frozen vegetables}	0.006100661	0.1088929	0.056024403
## [821]	{frozen vegetables, rolls/buns}	=> {whole milk}	0.005083884	0.5000000	0.010167768
## [822]	{frozen vegetables, whole milk}	=> {rolls/buns}	0.005083884	0.2487562	0.020437214
## [823]	{frozen vegetables, other vegetables}	=> {whole milk}	0.009659380	0.5428571	0.017793594
## [824]	{frozen vegetables, whole milk}	=> {other vegetables}	0.009659380	0.4726368	0.020437214
## [825]	{other vegetables, whole milk}	=> {frozen vegetables}	0.009659380	0.1290761	0.074834774
## [826]	{beef, root vegetables}	=> {other vegetables}	0.007930859	0.4561404	0.017386884
## [827]	{beef, other vegetables}	=> {root vegetables}	0.007930859	0.4020619	0.019725470
## [828]	{other vegetables, root vegetables}	=> {beef}	0.007930859	0.1673820	0.047381800
## [829]	{beef, root vegetables}	=> {whole milk}	0.008032537	0.4619883	0.017386884
## [830]	{beef, whole milk}	=> {root vegetables}	0.008032537	0.3779904	0.021250635
## [831]	{root vegetables, whole milk}	=> {beef}	0.008032537	0.1642412	0.048906965
## [832]	{beef, yogurt}	=> {other vegetables}	0.005185562	0.4434783	0.011692933
## [833]	{beef, other vegetables}	=> {yogurt}	0.005185562	0.2628866	0.019725470
## [834]	{other vegetables, yogurt}	=> {beef}	0.005185562	0.1194379	0.043416370
## [835]	{beef, yogurt}	=> {whole milk}	0.006100661	0.5217391	0.011692933
## [836]	{beef, whole milk}	=> {yogurt}	0.006100661	0.2870813	0.021250635
## [837]	{whole milk, yogurt}	=> {beef}	0.006100661	0.1088929	0.056024403
## [838]	{beef, rolls/buns}	=> {other vegetables}	0.005795628	0.4253731	0.013624809
## [839]	{beef, other vegetables}	=> {rolls/buns}	0.005795628	0.2938144	0.019725470
## [840]	{other vegetables, rolls/buns}	=> {beef}	0.005795628	0.1360382	0.042602949
## [841]	{beef, rolls/buns}	=> {whole milk}	0.006812405	0.5000000	0.013624809
## [842]	{beef, whole milk}	=> {rolls/buns}	0.006812405	0.3205742	0.021250635
## [843]	{rolls/buns, whole milk}	=> {beef}	0.006812405	0.1202873	0.056634469
## [844]	{beef, other vegetables}	=> {whole milk}	0.009252669	0.4690722	0.019725470
## [845]	{beef, whole milk}	=> {other vegetables}	0.009252669	0.4354067	0.021250635
## [846]	{other vegetables, whole milk}	=> {beef}	0.009252669	0.1236413	0.074834774
## [847]	{curd,				

##	whipped/sour cream}	=> {whole milk}	0.005897306	0.5631068	0.010472801
## [848]	{curd,	=> {whipped/sour cream}	0.005897306	0.2256809	0.026131164
##	whole milk}	=> {curd}	0.005897306	0.1829653	0.032231825
## [849]	{whipped/sour cream,	=> {yogurt}	0.005287239	0.5148515	0.010269446
##	whole milk}	=> {tropical fruit}	0.005287239	0.3058824	0.017285206
## [850]	{curd,	=> {curd}	0.005287239	0.1805556	0.029283172
##	tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446
## [851]	{curd,	=> {tropical fruit}	0.005287239	0.3076923	0.017183528
##	yogurt}	=> {curd}	0.005287239	0.1473088	0.035892222
## [852]	{tropical fruit,	=> {whole milk}	0.006507372	0.6336634	0.010269446
##	yogurt}	=> {tropical fruit}	0.006507372	0.2490272	0.026131164
## [853]	{curd,	=> {curd}	0.006507372	0.1538462	0.042297916
##	tropical fruit}	=> {other vegetables}	0.005490595	0.5046729	0.010879512
## [854]	{curd,	=> {root vegetables}	0.005490595	0.3195266	0.017183528
##	other vegetables}	=> {curd}	0.005490595	0.1158798	0.047381800
## [855]	{other vegetables,	=> {whole milk}	0.006202339	0.5700935	0.010879512
##	tropical fruit}	=> {root vegetables}	0.006202339	0.2373541	0.026131164
## [856]	{curd,	=> {curd}	0.006202339	0.1268191	0.048906965
##	tropical fruit}	=> {other vegetables}	0.006100661	0.3529412	0.017285206
## [857]	{curd,	=> {yogurt}	0.006100661	0.3550296	0.017183528
##	whole milk}	=> {curd}	0.006100661	0.1405152	0.043416370
## [858]	{tropical fruit,	=> {whole milk}	0.010066090	0.5823529	0.017285206
##	whole milk}	=> {yogurt}	0.010066090	0.3852140	0.026131164
## [859]	{curd,	=> {curd}	0.010066090	0.1796733	0.056024403
##	root vegetables}	=> {whole milk}	0.005897306	0.5858586	0.010066090
## [860]	{curd,	=> {rolls/buns}	0.005897306	0.2256809	0.026131164
##	other vegetables}	=> {curd}	0.005897306	0.1041293	0.056634469
## [861]	{other vegetables,	=> {curd,			
##	root vegetables}	rolls/buns}			
## [862]	{curd,	=> {whole milk}			
##	root vegetables}	=> {yogurt}			
## [863]	{curd,	=> {curd}			
##	whole milk}	=> {whole milk}			
## [864]	{root vegetables,	=> {yogurt}			
##	whole milk}	=> {curd}			
## [865]	{curd,	=> {other vegetables}			
##	yogurt}	=> {yogurt}			
## [866]	{curd,	=> {curd}			
##	other vegetables}	=> {curd}			
## [867]	{other vegetables,	=> {whole milk}			
##	yogurt}	=> {yogurt}			
## [868]	{curd,	=> {curd}			
##	yogurt}	=> {whole milk}			
## [869]	{curd,	=> {yogurt}			
##	whole milk}	=> {curd}			
## [870]	{whole milk,	=> {whole milk}			
##	yogurt}	=> {rolls/buns}			
## [871]	{curd,	=> {curd}			
##	rolls/buns}	=> {whole milk}			
## [872]	{curd,	=> {rolls/buns}			
##	whole milk}	=> {curd}			
## [873]	{rolls/buns,	=> {curd}			
##	whole milk}	=> {curd}			
## [874]	{curd,				

##	{other vegetables}	=> {whole milk}	0.009862735	0.5739645	0.017183528
## [875]	{curd,	=> {other vegetables}	0.009862735	0.3774319	0.026131164
##	whole milk}	=> {curd}	0.009862735	0.1317935	0.074834774
## [876]	{other vegetables,	=> {whole milk}	0.006100661	0.4958678	0.012302999
##	whole milk}	=> {yogurt}	0.006100661	0.3092784	0.019725470
## [877]	{napkins,	=> {napkins}	0.006100661	0.1088929	0.056024403
##	yogurt}	=> {whole milk}	0.005287239	0.4521739	0.011692933
## [878]	{napkins,	=> {rolls/buns}	0.005287239	0.2680412	0.019725470
##	whole milk}	=> {napkins,	0.006812405	0.4718310	0.014438231
## [879]	{whole milk,	whole milk}	0.006812405	0.3453608	0.019725470
##	yogurt}	=> {other vegetables}	0.007015760	0.5149254	0.013624809
## [880]	{napkins,	=> {other vegetables}	0.007015760	0.3239437	0.021657346
##	rolls/buns}	=> {root vegetables}	0.007015760	0.1480687	0.047381800
## [881]	{napkins,	=> {pork}	0.006812405	0.5000000	0.013624809
##	whole milk}	=> {whole milk}	0.006812405	0.3073394	0.022165735
## [882]	{napkins,	=> {root vegetables}	0.006812405	0.1392931	0.048906965
##	other vegetables}	=> {pork}	0.005592272	0.4954955	0.011286223
## [883]	{napkins,	=> {other vegetables}	0.005592272	0.2582160	0.021657346
##	whole milk}	=> {rolls/buns}	0.005592272	0.1312649	0.042602949
## [884]	{pork,	=> {pork}	0.006202339	0.5495495	0.011286223
##	root vegetables}	=> {whole milk}	0.006202339	0.2798165	0.022165735
## [885]	{other vegetables,	=> {rolls/buns}	0.006202339	0.1095153	0.056634469
##	pork}	=> {pork}	0.010167768	0.4694836	0.021657346
## [886]	{other vegetables,	=> {whole milk}	0.010167768	0.4587156	0.022165735
##	root vegetables}	=> {other vegetables}	0.010167768	0.1358696	0.074834774
## [887]	{pork,	=> {pork}	0.005185562	0.5483871	0.009456024
##	root vegetables}	=> {whole milk}	0.005185562	0.2524752	0.020538892
## [888]	{pork,	=> {tropical fruit}			
##	whole milk}				
## [889]	{root vegetables,				
##	whole milk}				
## [890]	{pork,				
##	rolls/buns}				
## [891]	{other vegetables,				
##	pork}				
## [892]	{other vegetables,				
##	rolls/buns}				
## [893]	{pork,				
##	rolls/buns}				
## [894]	{pork,				
##	whole milk}				
## [895]	{rolls/buns,				
##	whole milk}				
## [896]	{other vegetables,				
##	pork}				
## [897]	{pork,				
##	whole milk}				
## [898]	{other vegetables,				
##	whole milk}				
## [899]	{frankfurter,				
##	tropical fruit}				
## [900]	{frankfurter,				
##	whole milk}				
## [901]	{tropical fruit,				

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##      whole milk}          => {frankfurter}          0.005185562  0.1225962  0.042297916
## [902]  {frankfurter,       => {whole milk}           0.005083884  0.5000000  0.010167768
##      root vegetables}    => {root vegetables}   0.005083884  0.2475248  0.020538892
## [903]  {frankfurter,       => {frankfurter}          0.005083884  0.1039501  0.048906965
##      whole milk}          => {whole milk}           0.006202339  0.5545455  0.011184545
## [904]  {root vegetables,  => {yogurt}              0.006202339  0.3019802  0.020538892
##      whole milk}          => {frankfurter}          0.006202339  0.1107078  0.056024403
## [905]  {frankfurter,       => {whole milk}           0.006202339  0.2910053  0.019217082
##      yogurt}              => {frankfurter}          0.005592272  0.3395062  0.016471784
## [906]  {frankfurter,       => {other vegetables}  0.005592272  0.1312649  0.042602949
##      whole milk}          => {rolls/buns}          0.005998983  0.3121693  0.019217082
## [907]  {whole milk,        => {frankfurter}          0.005998983  0.2920792  0.020538892
##      yogurt}              => {whole milk}           0.005998983  0.1059246  0.056634469
## [908]  {frankfurter,       => {whole milk}           0.007625826  0.4629630  0.016471784
##      rolls/buns}          => {other vegetables}  0.007625826  0.3712871  0.020538892
## [909]  {frankfurter,       => {rolls/buns}          0.007625826  0.1019022  0.074834774
##      other vegetables}    => {frankfurter}          0.005083884  0.3225806  0.015760041
## [910]  {other vegetables, => {soda}                0.005083884  0.2994012  0.016980173
##      rolls/buns}          => {bottled water}         0.005083884  0.1754386  0.028978139
## [911]  {frankfurter,       => {bottled beer}         0.005083884  0.06100661  0.3870968  0.015760041
##      rolls/buns}          => {whole milk}           0.006100661  0.2985075  0.020437214
## [912]  {frankfurter,       => {bottled water}         0.006100661  0.1775148  0.034367056
##      whole milk}          => {bottled beer}         0.005185562  0.5604396  0.009252669
## [913]  {rolls/buns,        => {whole milk}           0.005185562  0.2537313  0.020437214
##      whole milk}          => {yogurt}              0.005185562  0.3955224  0.013624809
## [914]  {frankfurter,       => {whole milk}           0.005388917  0.2636816  0.020437214
##      other vegetables}    => {rolls/buns}          0.005388917  0.4716981  0.016166751
## [915]  {frankfurter,       => {whole milk}           0.007625826  0.1107078  0.056024403
##      whole milk}          => {other vegetables}  0.007625826  0.2910053  0.019217082
## [916]  {other vegetables, => {frankfurter}          0.007625826  0.3395062  0.016471784
##      whole milk}          => {whole milk}           0.007625826  0.1059246  0.056634469
## [917]  {bottled beer,      => {soda}                0.007625826  0.3712871  0.020538892
##      bottled water}        => {bottled water}         0.005083884  0.1754386  0.028978139
## [918]  {bottled beer,      => {bottled beer}         0.005083884  0.06100661  0.3870968  0.015760041
##      soda}                 => {whole milk}           0.006100661  0.2985075  0.020437214
## [919]  {bottled water,      => {bottled beer}         0.006100661  0.1775148  0.034367056
##      soda}                 => {bottled water}         0.005083884  0.5604396  0.009252669
## [920]  {bottled beer,      => {whole milk}           0.006100661  0.2537313  0.020437214
##      bottled water}        => {frankfurter}          0.005185562  0.3955224  0.013624809
## [921]  {bottled beer,      => {bottled water}         0.006100661  0.2636816  0.020437214
##      whole milk}          => {bottled beer}         0.005185562  0.1107078  0.056024403
## [922]  {bottled water,      => {whole milk}           0.006100661  0.2910053  0.019217082
##      whole milk}          => {yogurt}              0.005185562  0.3395062  0.016471784
## [923]  {bottled beer,      => {whole milk}           0.006100661  0.1059246  0.056634469
##      yogurt}               => {frankfurter}          0.005083884  0.1754386  0.028978139
## [924]  {bottled beer,      => {whole milk}           0.006100661  0.06100661  0.3870968  0.015760041
##      whole milk}          => {other vegetables}  0.005388917  0.2985075  0.020437214
## [925]  {bottled beer,      => {whole milk}           0.006100661  0.1775148  0.034367056
##      rolls/buns}          => {frankfurter}          0.005083884  0.5604396  0.009252669
## [926]  {bottled beer,      => {rolls/buns}          0.006100661  0.2537313  0.020437214
##      whole milk}          => {bottled beer}         0.005185562  0.3955224  0.013624809
## [927]  {bottled beer,      => {whole milk}           0.006100661  0.2636816  0.020437214
##      other vegetables}    => {bottled beer}         0.005185562  0.1107078  0.056024403
## [928]  {bottled beer,

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##	whole milk}	=> {other vegetables}	0.007625826	0.3731343	0.020437214
## [929]	{other vegetables, whole milk}	=> {bottled beer}	0.007625826	0.1019022	0.074834774
## [930]	{brown bread, tropical fruit}	=> {whole milk}	0.005693950	0.5333333	0.010676157
## [931]	{brown bread, whole milk}	=> {tropical fruit}	0.005693950	0.2258065	0.025216065
## [932]	{tropical fruit, whole milk}	=> {brown bread}	0.005693950	0.1346154	0.042297916
## [933]	{brown bread, root vegetables}	=> {whole milk}	0.005693950	0.5600000	0.010167768
## [934]	{brown bread, whole milk}	=> {root vegetables}	0.005693950	0.2258065	0.025216065
## [935]	{root vegetables, whole milk}	=> {brown bread}	0.005693950	0.1164241	0.048906965
## [936]	{brown bread, soda}	=> {whole milk}	0.005083884	0.4032258	0.012608033
## [937]	{brown bread, whole milk}	=> {soda}	0.005083884	0.2016129	0.025216065
## [938]	{soda, whole milk}	=> {brown bread}	0.005083884	0.1269036	0.040061007
## [939]	{brown bread, yogurt}	=> {other vegetables}	0.005185562	0.3566434	0.014539908
## [940]	{brown bread, other vegetables}	=> {yogurt}	0.005185562	0.2771739	0.018708693
## [941]	{other vegetables, yogurt}	=> {brown bread}	0.005185562	0.1194379	0.043416370
## [942]	{brown bread, yogurt}	=> {whole milk}	0.007117438	0.4895105	0.014539908
## [943]	{brown bread, whole milk}	=> {yogurt}	0.007117438	0.2822581	0.025216065
## [944]	{whole milk, yogurt}	=> {brown bread}	0.007117438	0.1270417	0.056024403
## [945]	{brown bread, rolls/buns}	=> {whole milk}	0.005287239	0.4193548	0.012608033
## [946]	{brown bread, whole milk}	=> {rolls/buns}	0.005287239	0.2096774	0.025216065
## [947]	{brown bread, other vegetables}	=> {whole milk}	0.009354347	0.5000000	0.018708693
## [948]	{brown bread, whole milk}	=> {other vegetables}	0.009354347	0.3709677	0.025216065
## [949]	{other vegetables, whole milk}	=> {brown bread}	0.009354347	0.1250000	0.074834774
## [950]	{domestic eggs, margarine}	=> {whole milk}	0.005185562	0.6219512	0.008337570
## [951]	{margarine, whole milk}	=> {domestic eggs}	0.005185562	0.2142857	0.024199288
## [952]	{domestic eggs, whole milk}	=> {margarine}	0.005185562	0.1728814	0.029994916
## [953]	{margarine, root vegetables}	=> {other vegetables}	0.005897306	0.5321101	0.011082867
## [954]	{margarine, other vegetables}	=> {root vegetables}	0.005897306	0.2989691	0.019725470
## [955]	{other vegetables,				

##	root vegetables}	=> {margarine}	0.005897306	0.1244635	0.047381800
## [956]	{margarine,	=> {other vegetables}	0.005693950	0.4000000	0.014234875
##	yogurt}	=> {yogurt}	0.005693950	0.2886598	0.019725470
## [957]	{margarine,	=> {margarine}	0.005693950	0.1311475	0.043416370
##	other vegetables}	=> {whole milk}	0.007015760	0.4928571	0.014234875
## [958]	{other vegetables,	=> {yogurt}	0.007015760	0.2899160	0.024199288
##	yogurt}	=> {margarine}	0.007015760	0.1252269	0.056024403
## [959]	{margarine,	=> {other vegetables}	0.005185562	0.3517241	0.014743264
##	yogurt}	=> {rolls/buns}	0.005185562	0.2628866	0.019725470
## [960]	{margarine,	=> {margarine}	0.005185562	0.1217184	0.042602949
##	whole milk}	=> {whole milk}	0.007930859	0.5379310	0.014743264
## [961]	{whole milk,	=> {rolls/buns}	0.007930859	0.3277311	0.024199288
##	yogurt}	=> {margarine}	0.007930859	0.1400359	0.056634469
## [962]	{margarine,	=> {whole milk}	0.009252669	0.4690722	0.019725470
##	rolls/buns}	=> {rolls/buns}	0.009252669	0.3823529	0.024199288
## [963]	{margarine,	=> {margarine}	0.009252669	0.1236413	0.074834774
##	other vegetables}	=> {whole milk}	0.005998983	0.6210526	0.009659380
## [964]	{other vegetables,	=> {other vegetables}	0.005998983	0.2177122	0.027554652
##	rolls/buns}	=> {margarine}	0.009252669	0.05998983	0.2000000
## [965]	{margarine,	=> {whole milk}	0.005998983	0.2000000	0.029994916
##	rolls/buns}	=> {domestic eggs}	0.005998983	0.2000000	0.029994916
## [966]	{margarine,	=> {butter}	0.005998983	0.2000000	0.029994916
##	whole milk}	=> {whole milk}	0.005998983	0.2000000	0.029994916
## [967]	{rolls/buns,	=> {margarine}	0.005998983	0.2000000	0.029994916
##	whole milk}	=> {whole milk}	0.005998983	0.2000000	0.029994916
## [968]	{margarine,	=> {whole milk}	0.005998983	0.2000000	0.029994916
##	other vegetables}	=> {other vegetables}	0.005998983	0.2000000	0.029994916
## [969]	{margarine,	=> {margarine}	0.005998983	0.2000000	0.029994916
##	whole milk}	=> {whole milk}	0.005998983	0.2000000	0.029994916
## [970]	{other vegetables,	=> {margarine}	0.005998983	0.2000000	0.029994916
##	whole milk}	=> {whole milk}	0.005998983	0.2000000	0.029994916
## [971]	{butter,	=> {whole milk}	0.005998983	0.2000000	0.029994916
##	domestic eggs}	=> {domestic eggs}	0.005998983	0.2000000	0.029994916
## [972]	{butter,	=> {butter}	0.005998983	0.2000000	0.029994916
##	whole milk}	=> {whole milk}	0.005998983	0.2000000	0.029994916
## [973]	{domestic eggs,	=> {whipped/sour cream}	0.005795628	0.5700000	0.010167768
##	whole milk}	=> {other vegetables}	0.005795628	0.2893401	0.020030503
## [974]	{butter,	=> {butter}	0.005795628	0.2007042	0.028876462
##	whipped/sour cream}	=> {whole milk}	0.006710727	0.6600000	0.010167768
## [975]	{butter,	=> {whipped/sour cream}	0.006710727	0.2435424	0.027554652
##	other vegetables}	=> {butter}	0.006710727	0.2082019	0.032231825
## [976]	{other vegetables,	=> {whole milk}	0.005083884	0.5555556	0.009150991
##	whipped/sour cream}	=> {whipped/sour cream}	0.005083884	0.1845018	0.027554652
## [977]	{butter,	=> {butter}	0.006710727	0.2082019	0.032231825
##	whipped/sour cream}	=> {whole milk}	0.006710727	0.2082019	0.032231825
## [978]	{butter,	=> {whipped/sour cream}	0.006710727	0.2082019	0.032231825
##	whole milk}	=> {butter}	0.006710727	0.2082019	0.032231825
## [979]	{whipped/sour cream,	=> {whole milk}	0.005083884	0.5555556	0.009150991
##	whole milk}	=> {whipped/sour cream}	0.005083884	0.1845018	0.027554652
## [980]	{butter,	=> {butter}	0.006710727	0.2082019	0.032231825
##	citrus fruit}	=> {whole milk}	0.005083884	0.5555556	0.009150991
## [981]	{butter,	=> {citrus fruit}	0.005083884	0.1845018	0.027554652
##	whole milk}	=> {whole milk}	0.005083884	0.5555556	0.009150991
## [982]	{citrus fruit,	=> {whole milk}	0.005083884	0.1845018	0.027554652

##	whole milk}	=> {butter}	0.005083884	0.1666667	0.030503305
## [983]	{bottled water,	=> {whole milk}	0.005388917	0.6022727	0.008947636
##	butter}	=> {bottled water}	0.005388917	0.1955720	0.027554652
## [984]	{butter,	=> {butter}	0.005388917	0.1568047	0.034367056
##	whole milk}	=> {other vegetables}	0.005490595	0.5510204	0.009964413
## [985]	{bottled water,	=> {tropical fruit}	0.005490595	0.2741117	0.020030503
##	whole milk}	=> {butter}	0.005490595	0.1529745	0.035892222
## [986]	{butter,	=> {whole milk}	0.006202339	0.6224490	0.009964413
##	tropical fruit}	=> {tropical fruit}	0.006202339	0.2250923	0.027554652
## [987]	{butter,	=> {butter}	0.006202339	0.1466346	0.042297916
##	other vegetables}	=> {other vegetables}	0.006609049	0.5118110	0.012913066
## [988]	{other vegetables,	=> {root vegetables}	0.006609049	0.3299492	0.020030503
##	tropical fruit}	=> {butter}	0.006609049	0.1394850	0.047381800
## [989]	{butter,	=> {whole milk}	0.008235892	0.6377953	0.012913066
##	tropical fruit}	=> {root vegetables}	0.008235892	0.2988930	0.027554652
## [990]	{butter,	=> {butter}	0.008235892	0.1683992	0.048906965
##	whole milk}	=> {other vegetables}	0.006405694	0.4375000	0.014641586
## [991]	{tropical fruit,	=> {yogurt}	0.006405694	0.3197970	0.020030503
##	whole milk}	=> {butter}	0.006405694	0.1475410	0.043416370
## [992]	{butter,	=> {whole milk}	0.009354347	0.6388889	0.014641586
##	root vegetables}	=> {yogurt}	0.009354347	0.3394834	0.027554652
## [993]	{butter,	=> {butter}	0.009354347	0.1669691	0.056024403
##	other vegetables}	=> {other vegetables}	0.005693950	0.4242424	0.013421454
## [994]	{other vegetables,	=> {rolls/buns}	0.005693950	0.2842640	0.020030503
##	root vegetables}	=> {butter}	0.005693950	0.1336516	0.042602949
## [995]	{butter,	=> {whole milk}	0.006609049	0.4924242	0.013421454
##	root vegetables}	=> {rolls/buns}	0.006609049	0.2398524	0.027554652
## [996]	{butter,				
##	whole milk}				
## [997]	{root vegetables,				
##	whole milk}				
## [998]	{butter,				
##	yogurt}				
## [999]	{butter,				
##	other vegetables}				
## [1000]	{other vegetables,				
##	yogurt}				
## [1001]	{butter,				
##	yogurt}				
## [1002]	{butter,				
##	whole milk}				
## [1003]	{whole milk,				
##	yogurt}				
## [1004]	{butter,				
##	rolls/buns}				
## [1005]	{butter,				
##	other vegetables}				
## [1006]	{other vegetables,				
##	rolls/buns}				
## [1007]	{butter,				
##	rolls/buns}				
## [1008]	{butter,				
##	whole milk}				
## [1009]	{rolls/buns,				

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##      whole milk}          => {butter}          0.006609049  0.1166966  0.056634469
## [1010] {butter,           => {whole milk}        0.011489578  0.5736041  0.020030503
##      other vegetables}    => {other vegetables} 0.011489578  0.4169742  0.027554652
## [1011] {butter,           => {butter}           0.011489578  0.1535326  0.074834774
##      whole milk}
## [1012] {other vegetables,=> {whole milk}        0.005083884  0.4310345  0.011794611
##      whole milk}
## [1013] {newspapers,       => {tropical fruit} 0.005083884  0.1858736  0.027351296
##      tropical fruit}
## [1014] {newspapers,       => {whole milk}        0.005083884  0.1201923  0.042297916
##      whole milk}
## [1015] {tropical fruit,  => {newspapers}        0.005998983  0.5221239  0.011489578
##      whole milk}
## [1016] {newspapers,       => {other vegetables} 0.005998983  0.3105263  0.019318760
##      root vegetables}
## [1017] {newspapers,       => {root vegetables} 0.005998983  0.1266094  0.047381800
##      other vegetables}
## [1018] {other vegetables,=> {newspapers}        0.005795628  0.5044248  0.011489578
##      root vegetables}
## [1019] {newspapers,       => {whole milk}        0.005795628  0.2118959  0.027351296
##      root vegetables}
## [1020] {newspapers,       => {root vegetables} 0.005795628  0.1185031  0.048906965
##      whole milk}
## [1021] {root vegetables,=> {newspapers}        0.005083884  0.3311258  0.015353330
##      whole milk}
## [1022] {newspapers,       => {rolls/buns}        0.005083884  0.2577320  0.019725470
##      yogurt}
## [1023] {newspapers,       => {yogurt}           0.005083884  0.1479290  0.034367056
##      rolls/buns}
## [1024] {rolls/buns,       => {newspapers}        0.005592272  0.3642384  0.015353330
##      yogurt}
## [1025] {newspapers,       => {other vegetables} 0.005592272  0.2894737  0.019318760
##      yogurt}
## [1026] {newspapers,       => {yogurt}           0.005592272  0.1288056  0.043416370
##      other vegetables}
## [1027] {other vegetables,=> {newspapers}        0.006609049  0.4304636  0.015353330
##      yogurt}
## [1028] {newspapers,       => {whole milk}        0.006609049  0.2416357  0.027351296
##      yogurt}
## [1029] {newspapers,       => {yogurt}           0.006609049  0.1179673  0.056024403
##      whole milk}
## [1030] {whole milk,       => {newspapers}        0.005490595  0.2783505  0.019725470
##      yogurt}
## [1031] {newspapers,       => {other vegetables} 0.005490595  0.2842105  0.019318760
##      rolls/buns}
## [1032] {newspapers,       => {rolls/buns}        0.005490595  0.1288783  0.042602949
##      other vegetables}
## [1033] {other vegetables,=> {newspapers}        0.007625826  0.3865979  0.019725470
##      rolls/buns}
## [1034] {newspapers,       => {whole milk}        0.007625826  0.2788104  0.027351296
##      rolls/buns}
## [1035] {newspapers,       => {rolls/buns}        0.007625826  0.1166966  0.056634469
##      whole milk}
## [1036] {rolls/buns,

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## [1037] {newspapers,	=> {newspapers}	0.007625826	0.1346499	0.056634469
## [1038] {newspapers,	=> {whole milk}	0.008337570	0.4315789	0.019318760
## [1039] {other vegetables,	=> {other vegetables}	0.008337570	0.3048327	0.027351296
## [1040] {whole milk}	=> {newspapers}	0.008337570	0.1114130	0.074834774
## [1041] {domestic eggs,	=> {other vegetables}	0.005083884	0.5102041	0.009964413
## [1042] {whipped/sour cream}	=> {domestic eggs,	0.005083884	0.2283105	0.022267412
## [1043] {other vegetables,	=> {whipped/sour cream}	0.005083884	0.1760563	0.028876462
## [1044] {whole milk}	=> {whole milk}	0.005693950	0.5714286	0.009964413
## [1045] {domestic eggs,	=> {whipped/sour cream}	0.005693950	0.1898305	0.029994916
## [1046] {whipped/sour cream,	=> {domestic eggs}	0.005693950	0.1766562	0.032231825
## [1047] {whole milk}	=> {whole milk}	0.005388917	0.6235294	0.008642603
## [1048] {domestic eggs,	=> {pip fruit}	0.005388917	0.1796610	0.029994916
## [1049] {whole milk}	=> {whole milk}	0.005388917	0.1790541	0.030096594
## [1050] {domestic eggs,	=> {domestic eggs}	0.005693950	0.5490196	0.010371124
## [1051] {whole milk}	=> {whole milk}	0.005693950	0.1898305	0.029994916
## [1052] {domestic eggs,	=> {citrus fruit}	0.005693950	0.1866667	0.030503305
## [1053] {whole milk}	=> {domestic eggs}	0.006914082	0.6071429	0.011387900
## [1054] {tropical fruit}	=> {whole milk}	0.006914082	0.2305085	0.029994916
## [1055] {domestic eggs,	=> {tropical fruit}	0.006914082	0.1634615	0.042297916
## [1056] {whole milk}	=> {domestic eggs}	0.007320793	0.5106383	0.014336553
## [1057] {root vegetables}	=> {other vegetables}	0.007320793	0.3287671	0.022267412
## [1058] {domestic eggs,	=> {root vegetables}	0.007320793	0.1545064	0.047381800
## [1059] {whole milk}	=> {domestic eggs}	0.008540925	0.5957447	0.014336553
## [1060] {root vegetables,	=> {whole milk}	0.008540925	0.2847458	0.029994916
## [1061] {whole milk}	=> {root vegetables}	0.008540925	0.1746362	0.048906965
## [1062] {domestic eggs,	=> {domestic eggs}	0.005083884	0.4098361	0.012404677
## [1063] {soda}	=> {other vegetables}	0.005083884	0.2283105	0.022267412
## [1064] {whole milk},	=> {soda}	0.005083884	0.1114130	0.074834774

## [1064] {domestic eggs,	=> {domestic eggs}	0.005083884	0.1552795	0.032740214
## soda}	=> {whole milk}	0.005185562	0.4180328	0.012404677
## [1065] {domestic eggs,	=> {soda}	0.005185562	0.1728814	0.029994916
## whole milk}	=> {domestic eggs}	0.005185562	0.1294416	0.040061007
## [1066] {soda,	=> {other vegetables}	0.005795628	0.4042553	0.014336553
## whole milk}	=> {yogurt}	0.005795628	0.2602740	0.022267412
## [1067] {domestic eggs,	=> {domestic eggs}	0.005795628	0.1334895	0.043416370
## yogurt}	=> {whole milk}	0.007727504	0.5390071	0.014336553
## [1068] {domestic eggs,	=> {yogurt}	0.007727504	0.2576271	0.029994916
## other vegetables}	=> {domestic eggs}	0.007727504	0.1379310	0.056024403
## [1069] {other vegetables,	=> {other vegetables}	0.005897306	0.3766234	0.015658363
## yogurt}	=> {rolls/buns}	0.005897306	0.2648402	0.022267412
## [1070] {domestic eggs,	=> {domestic eggs}	0.005897306	0.1384248	0.042602949
## yogurt}	=> {whole milk}	0.006609049	0.4220779	0.015658363
## [1071] {domestic eggs,	=> {yogurt}	0.006609049	0.2203390	0.029994916
## whole milk}	=> {rolls/buns}	0.006609049	0.1166966	0.056634469
## [1072] {whole milk,	=> {domestic eggs}	0.012302999	0.5525114	0.022267412
## yogurt}	=> {whole milk}	0.012302999	0.4101695	0.029994916
## [1073] {domestic eggs,	=> {rolls/buns}	0.012302999	0.1644022	0.074834774
## rolls/buns}	=> {domestic eggs}	0.005185562	0.3642857	0.014234875
## [1074] {domestic eggs,	=> {whole milk}	0.005185562	0.2817680	0.018403660
## other vegetables}	=> {soda}	0.005185562	0.1789474	0.028978139
## [1075] {other vegetables,	=> {bottled water}	0.005795628	0.4071429	0.014234875
## rolls/buns}	=> {fruit/vegetable juice}	0.005795628	0.2175573	0.026639553
## [1076] {domestic eggs,	=> {whole milk}	0.005795628	0.1686391	0.034367056
## rolls/buns}	=> {bottled water}	0.006609049	0.4814815	0.013726487
## [1077] {domestic eggs,	=> {fruit/vegetable juice}	0.006609049	0.3140097	0.021047280
## whole milk}	=> {other vegetables}	0.005185562	0.4180328	0.012404677
## [1078] {rolls/buns,	=> {tropical fruit}	0.005185562	0.1728814	0.029994916
## whole milk}	=> {domestic eggs}	0.005795628	0.2602740	0.022267412
## [1079] {domestic eggs,	=> {whole milk}	0.005795628	0.2203390	0.029994916
## other vegetables}	=> {rolls/buns}	0.006609049	0.1166966	0.056634469
## [1080] {domestic eggs,	=> {domestic eggs}	0.012302999	0.5525114	0.022267412
## whole milk}	=> {other vegetables}	0.012302999	0.4101695	0.029994916
## [1081] {other vegetables,	=> {whole milk}	0.012302999	0.1644022	0.074834774
## whole milk}	=> {soda}	0.005185562	0.3642857	0.014234875
## [1082] {bottled water,	=> {bottled water}	0.005185562	0.2817680	0.018403660
## fruit/vegetable juice}	=> {fruit/vegetable juice}	0.005185562	0.1789474	0.028978139
## [1083] {fruit/vegetable juice,	=> {whole milk}	0.005795628	0.4071429	0.014234875
## soda}	=> {bottled water}	0.005795628	0.2175573	0.026639553
## [1084] {bottled water,	=> {fruit/vegetable juice}	0.005795628	0.1686391	0.034367056
## soda}	=> {whole milk}	0.006609049	0.4814815	0.013726487
## [1085] {bottled water,	=> {bottled water}	0.005795628	0.3140097	0.021047280
## fruit/vegetable juice}	=> {fruit/vegetable juice}	0.005795628	0.2203390	0.029994916
## [1086] {fruit/vegetable juice,	=> {whole milk}	0.006609049	0.1166966	0.056634469
## whole milk}	=> {bottled water}	0.005795628	0.4101695	0.029994916
## [1087] {bottled water,	=> {fruit/vegetable juice}	0.005795628	0.1644022	0.074834774
## whole milk}	=> {other vegetables}	0.006609049	0.3642857	0.014234875
## [1088] {fruit/vegetable juice,	=> {tropical fruit}	0.006609049	0.2817680	0.018403660
## tropical fruit}	=> {domestic eggs}	0.005185562	0.1789474	0.028978139
## [1089] {fruit/vegetable juice,	=> {whole milk}	0.005185562	0.4071429	0.014234875
## other vegetables}	=> {bottled water}	0.005795628	0.2175573	0.026639553
## [1090] {other vegetables,	=> {fruit/vegetable juice}	0.005795628	0.1686391	0.034367056

##	tropical fruit}	=> {fruit/vegetable juice}	0.006609049	0.1841360	0.035892222
## [1091]	{fruit/vegetable juice,	=> {whole milk}	0.005998983	0.4370370	0.013726487
##	tropical fruit}	=> {tropical fruit}	0.005998983	0.2251908	0.026639553
## [1092]	{fruit/vegetable juice,	=> {fruit/vegetable juice}	0.005998983	0.1418269	0.042297916
##	whole milk}	=> {other vegetables}	0.006609049	0.5508475	0.011997966
## [1093]	{tropical fruit,	=> {root vegetables}	0.006609049	0.3140097	0.021047280
##	whole milk}	=> {fruit/vegetable juice}	0.006609049	0.1394850	0.047381800
## [1094]	{fruit/vegetable juice,	=> {whole milk}	0.006507372	0.5423729	0.011997966
##	root vegetables}	=> {root vegetables}	0.006507372	0.2442748	0.026639553
## [1095]	{fruit/vegetable juice,	=> {fruit/vegetable juice}	0.006507372	0.1330561	0.048906965
##	other vegetables}	=> {yogurt}	0.005083884	0.2762431	0.018403660
## [1096]	{other vegetables,	=> {soda}	0.005083884	0.2717391	0.018708693
##	root vegetables}	=> {fruit/vegetable juice}	0.005083884	0.1858736	0.027351296
## [1097]	{fruit/vegetable juice,	=> {whole milk}	0.006100661	0.3314917	0.018403660
##	root vegetables}	=> {soda}	0.006100661	0.2290076	0.026639553
## [1098]	{fruit/vegetable juice,	=> {fruit/vegetable juice}	0.006100661	0.1522843	0.040061007
##	whole milk}	=> {other vegetables}	0.008235892	0.4402174	0.018708693
## [1101]	{fruit/vegetable juice,	=> {yogurt}	0.008235892	0.3913043	0.021047280
##	yogurt}	=> {fruit/vegetable juice}	0.008235892	0.1896956	0.043416370
## [1102]	{soda,	=> {whole milk}	0.009456024	0.5054348	0.018708693
##	yogurt}	=> {yogurt}	0.009456024	0.3549618	0.026639553
## [1103]	{fruit/vegetable juice,	=> {fruit/vegetable juice}	0.009456024	0.1687840	0.056024403
##	soda}	=> {whole milk}	0.005592272	0.3846154	0.014539908
## [1104]	{fruit/vegetable juice,	=> {rolls/buns}	0.005592272	0.2099237	0.026639553
##	whole milk}	=> {whole milk}	0.010472801	0.4975845	0.021047280
## [1105]	{soda,	=> {other vegetables}	0.010472801	0.3931298	0.026639553
##	whole milk}	=> {fruit/vegetable juice}	0.010472801	0.1399457	0.074834774
## [1106]	{fruit/vegetable juice,				
##	yogurt}				
## [1107]	{fruit/vegetable juice,				
##	other vegetables}				
## [1108]	{other vegetables,				
##	yogurt}				
## [1109]	{fruit/vegetable juice,				
##	yogurt}				
## [1110]	{fruit/vegetable juice,				
##	whole milk}				
## [1111]	{whole milk,				
##	yogurt}				
## [1112]	{fruit/vegetable juice,				
##	rolls/buns}				
## [1113]	{fruit/vegetable juice,				
##	whole milk}				
## [1114]	{fruit/vegetable juice,				
##	other vegetables}				
## [1115]	{fruit/vegetable juice,				
##	whole milk}				
## [1116]	{other vegetables,				
##	whole milk}				
## [1117]	{pip fruit,				

##	whipped/sour cream}	=> {other vegetables}	0.005592272	0.6043956	0.009252669
## [1118]	{other vegetables,	=> {pip fruit}	0.005592272	0.1936620	0.028876462
##	whipped/sour cream}	=> {whipped/sour cream}	0.005592272	0.2140078	0.026131164
## [1119]	{other vegetables,	=> {whole milk}	0.005998983	0.6483516	0.009252669
##	pip fruit}	=> {pip fruit}	0.005998983	0.1861199	0.032231825
## [1120]	{pip fruit,	=> {whipped/sour cream}	0.005998983	0.1993243	0.030096594
##	whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512
## [1121]	{whipped/sour cream,	=> {citrus fruit}	0.005693950	0.1971831	0.028876462
##	whole milk}	=> {whipped/sour cream}	0.005693950	0.1971831	0.028876462
## [1122]	{pip fruit,	=> {whole milk}	0.006304016	0.5794393	0.010879512
##	whole milk}	=> {citrus fruit}	0.006304016	0.1955836	0.032231825
## [1123]	{citrus fruit,	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305
##	whipped/sour cream}	=> {whole milk}	0.005083884	0.5617978	0.009049314
## [1124]	{other vegetables,	=> {sausage}	0.005083884	0.1577287	0.032231825
##	whipped/sour cream}	=> {whipped/sour cream}	0.005083884	0.1700680	0.029893238
## [1125]	{citrus fruit,	=> {yogurt}	0.006202339	0.4485294	0.013828165
##	other vegetables}	=> {tropical fruit}	0.006202339	0.2990196	0.020742247
## [1126]	{citrus fruit,	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172
##	whipped/sour cream}	=> {other vegetables}	0.007829181	0.5661765	0.013828165
## [1127]	{whipped/sour cream,	=> {tropical fruit}	0.007829181	0.2711268	0.028876462
##	whole milk}	=> {whipped/sour cream}	0.007829181	0.2181303	0.035892222
## [1128]	{citrus fruit,	=> {whole milk}	0.007930859	0.5735294	0.013828165
##	whole milk}	=> {tropical fruit}	0.007930859	0.2460568	0.032231825
## [1129]	{sausage,	=> {whipped/sour cream}	0.007930859	0.1875000	0.042297916
##	whipped/sour cream}	=> {yogurt}	0.006405694	0.3750000	0.017081851
## [1130]	{whipped/sour cream,	=> {root vegetables}	0.006405694	0.3088235	0.020742247
##	whole milk}	=> {whipped/sour cream}	0.006405694	0.2480315	0.025826131
## [1131]	{sausage,				
##	whole milk}				
## [1132]	{tropical fruit,				
##	whipped/sour cream}				
## [1133]	{whipped/sour cream,				
##	yogurt}				
## [1134]	{tropical fruit,				
##	yogurt}				
## [1135]	{tropical fruit,				
##	whipped/sour cream}				
## [1136]	{other vegetables,				
##	whipped/sour cream}				
## [1137]	{other vegetables,				
##	tropical fruit}				
## [1138]	{tropical fruit,				
##	whipped/sour cream}				
## [1139]	{whipped/sour cream,				
##	whole milk}				
## [1140]	{tropical fruit,				
##	whole milk}				
## [1141]	{root vegetables,				
##	whipped/sour cream}				
## [1142]	{whipped/sour cream,				
##	yogurt}				
## [1143]	{root vegetables,				
##	yogurt}				
## [1144]	{root vegetables,				

##	whipped/sour cream}	=> {other vegetables}	0.008540925	0.5000000	0.017081851
## [1145]	{other vegetables,	=> {root vegetables}	0.008540925	0.2957746	0.028876462
	whipped/sour cream}	=> {whipped/sour cream}	0.008540925	0.1802575	0.047381800
## [1146]	{other vegetables,	=> {whole milk}	0.009456024	0.5535714	0.017081851
	root vegetables}	=> {root vegetables}	0.009456024	0.2933754	0.032231825
## [1147]	{root vegetables,	=> {whipped/sour cream}	0.009456024	0.1933472	0.048906965
	whipped/sour cream}	=> {whole milk}	0.005490595	0.4736842	0.011591256
## [1148]	{whipped/sour cream,	=> {soda}	0.005490595	0.1703470	0.032231825
	whole milk}	=> {whipped/sour cream}	0.005490595	0.1370558	0.040061007
## [1149]	{root vegetables,	=> {other vegetables}	0.010167768	0.4901961	0.020742247
	whole milk}	=> {yogurt}	0.010167768	0.3521127	0.028876462
## [1150]	{soda,	=> {whipped/sour cream}	0.010167768	0.2341920	0.043416370
	whipped/sour cream}	=> {whole milk}	0.010879512	0.5245098	0.020742247
## [1151]	{whipped/sour cream,	=> {yogurt}	0.010879512	0.3375394	0.032231825
	whole milk}	=> {whipped/sour cream}	0.010879512	0.1941924	0.056024403
## [1152]	{soda,	=> {other vegetables}	0.006710727	0.4583333	0.014641586
	whole milk}	=> {rolls/buns}	0.006710727	0.2323944	0.028876462
## [1153]	{whipped/sour cream,	=> {whipped/sour cream}	0.006710727	0.1575179	0.042602949
	yogurt}	=> {whole milk}	0.007829181	0.5347222	0.014641586
## [1154]	{other vegetables,	=> {rolls/buns}	0.007829181	0.2429022	0.032231825
	whipped/sour cream}	=> {whipped/sour cream}	0.007829181	0.1382406	0.056634469
## [1155]	{other vegetables,	=> {whole milk}	0.014641586	0.5070423	0.028876462
	yogurt}	=> {other vegetables}	0.014641586	0.4542587	0.032231825
## [1156]	{whipped/sour cream,	=> {whipped/sour cream}	0.014641586	0.1956522	0.074834774
	yogurt}	=> {whole milk}	0.005083884	0.4761905	0.010676157
## [1157]	{whipped/sour cream,	=> {pastry}	0.005083884	0.1689189	0.030096594
	whole milk}	=> {pip fruit}	0.005083884	0.1529052	0.033248602
## [1158]	{whole milk,				
	yogurt}				
## [1159]	{rolls/buns,				
	whipped/sour cream}				
## [1160]	{other vegetables,				
	whipped/sour cream}				
## [1161]	{other vegetables,				
	rolls/buns}				
## [1162]	{rolls/buns,				
	whipped/sour cream}				
## [1163]	{whipped/sour cream,				
	whole milk}				
## [1164]	{rolls/buns,				
	whole milk}				
## [1165]	{other vegetables,				
	whipped/sour cream}				
## [1166]	{whipped/sour cream,				
	whole milk}				
## [1167]	{other vegetables,				
	whole milk}				
## [1168]	{pastry,				
	pip fruit}				
## [1169]	{pip fruit,				
	whole milk}				
## [1170]	{pastry,				
	whole milk}				
## [1171]	{citrus fruit,				

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##      pip fruit}          => {tropical fruit}          0.005592272  0.4044118  0.013828165 :
## [1172] {pip fruit,        => {citrus fruit}          0.005592272  0.2736318  0.020437214 :
##       tropical fruit}     => {pip fruit}           0.005592272  0.2806122  0.019928826 :
## [1173] {citrus fruit,    => {other vegetables}   0.005897306  0.4264706  0.013828165 :
##       tropical fruit}     => {citrus fruit}          0.005897306  0.2256809  0.026131164 :
## [1174] {citrus fruit,    => {pip fruit}            0.005897306  0.2042254  0.028876462 :
##       pip fruit}           => {whole milk}          0.005185562  0.3750000  0.013828165 :
## [1175] {other vegetables,=> {citrus fruit}          0.005185562  0.1722973  0.030096594 :
##       pip fruit}           => {pip fruit}            0.005185562  0.1700000  0.030503305 :
## [1176] {citrus fruit,    => {whole milk}          0.005592272  0.5188679  0.010777834 :
##       other vegetables}    => {sausage}             0.005592272  0.1858108  0.030096594 :
## [1177] {citrus fruit,    => {pip fruit}            0.005592272  0.1870748  0.029893238 :
##       pip fruit}           => {whole milk}          0.005287239  0.2587065  0.020437214 :
## [1178] {pip fruit,        => {root vegetables}   0.005287239  0.3398693  0.015556685 :
##       whole milk}          => {tropical fruit}     0.005287239  0.2512077  0.021047280 :
## [1179] {citrus fruit,    => {pip fruit}            0.006405694  0.3134328  0.020437214 :
##       whole milk}          => {yogurt}              0.006405694  0.3559322  0.017996950 :
## [1180] {pip fruit,        => {tropical fruit}     0.006405694  0.2187500  0.029283172 :
##       sausage}              => {pip fruit}            0.009456024  0.4626866  0.020437214 :
## [1181] {pip fruit,        => {other vegetables}  0.009456024  0.3618677  0.026131164 :
##       whole milk}          => {tropical fruit}     0.009456024  0.2634561  0.035892222 :
## [1182] {sausage,          => {pip fruit}            0.008439248  0.4129353  0.020437214 :
##       whole milk}           => {whole milk}          0.008439248  0.2804054  0.030096594 :
## [1183] {pip fruit,        => {tropical fruit}     0.008439248  0.1995192  0.042297916 :
##       tropical fruit}       => {pip fruit}            0.005287239  0.3398693  0.015556685 :
## [1184] {pip fruit,        => {yogurt}              0.005287239  0.2937853  0.017996950 :
##       root vegetables}     => {root vegetables}   0.005287239  0.2047244  0.025826131 :
## [1185] {root vegetables,  => {pip fruit}            0.005287239  0.2047244  0.025826131 :
##       tropical fruit}       => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1186] {pip fruit,        => {yogurt}              0.005287239  0.2047244  0.025826131 :
##       tropical fruit}       => {tropical fruit}     0.005287239  0.2047244  0.025826131 :
## [1187] {pip fruit,        => {tropical fruit}     0.005287239  0.2047244  0.025826131 :
##       yogurt}               => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1188] {tropical fruit,  => {pip fruit}            0.005287239  0.2047244  0.025826131 :
##       yogurt}              => {other vegetables}  0.005287239  0.2047244  0.025826131 :
## [1189] {pip fruit,        => {tropical fruit}     0.005287239  0.2047244  0.025826131 :
##       tropical fruit}       => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1190] {other vegetables,=> {tropical fruit}     0.005287239  0.2047244  0.025826131 :
##       pip fruit}             => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1191] {other vegetables,=> {pip fruit}            0.005287239  0.2047244  0.025826131 :
##       tropical fruit}        => {whole milk}          0.008439248  0.4129353  0.020437214 :
## [1192] {pip fruit,        => {tropical fruit}     0.008439248  0.2804054  0.030096594 :
##       tropical fruit}       => {pip fruit}            0.008439248  0.1995192  0.042297916 :
## [1193] {pip fruit,        => {yogurt}              0.008439248  0.2937853  0.017996950 :
##       whole milk}           => {tropical fruit}     0.008439248  0.2047244  0.025826131 :
## [1194] {tropical fruit,  => {pip fruit}            0.008439248  0.2047244  0.025826131 :
##       whole milk}            => {yogurt}              0.005287239  0.3398693  0.015556685 :
## [1195] {pip fruit,        => {root vegetables}   0.005287239  0.2937853  0.017996950 :
##       root vegetables}      => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1196] {pip fruit,        => {yogurt}              0.005287239  0.2047244  0.025826131 :
##       yogurt}                => {root vegetables}   0.005287239  0.2047244  0.025826131 :
## [1197] {root vegetables,  => {pip fruit}            0.005287239  0.2047244  0.025826131 :
##       yogurt}                 => {pip fruit}            0.005287239  0.2047244  0.025826131 :
## [1198] {pip fruit,

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##      root vegetables}          => {other vegetables}          0.008134215  0.5228758  0.015556685 :
## [1199] {other vegetables,      => {root vegetables}          0.008134215  0.3112840  0.026131164 :
##           pip fruit}          => {pip fruit}              0.008134215  0.1716738  0.047381800 :
## [1200] {other vegetables,      => {whole milk}             0.008947636  0.5751634  0.015556685 :
##           root vegetables}     => {root vegetables}         0.008947636  0.2972973  0.030096594 :
## [1201] {pip fruit,            => {pip fruit}              0.008947636  0.1829522  0.048906965 :
##           root vegetables}     => {other vegetables}        0.008134215  0.4519774  0.017996950 :
## [1202] {pip fruit,            => {yogurt}                 0.008134215  0.3112840  0.026131164 :
##           whole milk}          => {pip fruit}              0.008134215  0.1873536  0.043416370 :
## [1203] {root vegetables,      => {whole milk}             0.009557702  0.5310734  0.017996950 :
##           whole milk}          => {yogurt}                 0.009557702  0.3175676  0.030096594 :
## [1204] {pip fruit,            => {pip fruit}              0.009557702  0.1705989  0.056024403 :
##           yogurt}              => {other vegetables}        0.005083884  0.3649635  0.013929842 :
## [1205] {other vegetables,      => {rolls/buns}             0.005083884  0.1945525  0.026131164 :
##           pip fruit}           => {pip fruit}              0.005083884  0.1193317  0.042602949 :
## [1206] {other vegetables,      => {whole milk}             0.006202339  0.4452555  0.013929842 :
##           yogurt}              => {rolls/buns}             0.006202339  0.2060811  0.030096594 :
## [1207] {pip fruit,            => {whole milk}             0.006202339  0.1095153  0.056634469 :
##           yogurt}              => {pip fruit}              0.013523132  0.5175097  0.026131164 :
## [1208] {pip fruit,            => {whole milk}             0.013523132  0.4493243  0.030096594 :
##           whole milk}           => {other vegetables}        0.013523132  0.1807065  0.074834774 :
## [1209] {whole milk,           => {pip fruit}              0.005693950  0.4552846  0.012506355 :
##           yogurt}              => {whole milk}             0.005693950  0.1712538  0.033248602 :
## [1210] {pip fruit,            => {sausage}                0.005693950  0.1904762  0.029893238 :
##           rolls/buns}           => {pastry}                 0.005693950  0.3846154  0.013218099 :
## [1211] {other vegetables,      => {other vegetables}        0.005083884  0.2252252  0.022572445 :
##           pip fruit}           => {tropical fruit}         0.005083884  0.1416431  0.035892222 :
## [1212] {other vegetables,      => {pastry}                 0.005083884
##           rolls/buns}           => {pastry}

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##	tropical fruit}	=> {whole milk}	0.006710727	0.5076923	0.013218099
## [1226]	{pastry, whole milk}	=> {tropical fruit}	0.006710727	0.2018349	0.033248602
## [1227]	{tropical fruit, whole milk}	=> {pastry}	0.006710727	0.1586538	0.042297916
## [1228]	{pastry, root vegetables}	=> {other vegetables}	0.005897306	0.5370370	0.010981190
## [1229]	{other vegetables, pastry}	=> {root vegetables}	0.005897306	0.2612613	0.022572445
## [1230]	{other vegetables, root vegetables}	=> {pastry}	0.005897306	0.1244635	0.047381800
## [1231]	{pastry, root vegetables}	=> {whole milk}	0.005693950	0.5185185	0.010981190
## [1232]	{pastry, whole milk}	=> {root vegetables}	0.005693950	0.1712538	0.033248602
## [1233]	{root vegetables, whole milk}	=> {pastry}	0.005693950	0.1164241	0.048906965
## [1234]	{pastry, soda}	=> {rolls/buns}	0.005388917	0.2560386	0.021047280
## [1235]	{pastry, rolls/buns}	=> {soda}	0.005388917	0.2572816	0.020945602
## [1236]	{rolls/buns, soda}	=> {pastry}	0.005388917	0.1405836	0.038332486
## [1237]	{pastry, soda}	=> {other vegetables}	0.005490595	0.2608696	0.021047280
## [1238]	{other vegetables, pastry}	=> {soda}	0.005490595	0.2432432	0.022572445
## [1239]	{other vegetables, soda}	=> {pastry}	0.005490595	0.1677019	0.032740214
## [1240]	{pastry, soda}	=> {whole milk}	0.008235892	0.3913043	0.021047280
## [1241]	{pastry, whole milk}	=> {soda}	0.008235892	0.2477064	0.033248602
## [1242]	{soda, whole milk}	=> {pastry}	0.008235892	0.2055838	0.040061007
## [1243]	{pastry, yogurt}	=> {rolls/buns}	0.005795628	0.3275862	0.017691917
## [1244]	{pastry, rolls/buns}	=> {yogurt}	0.005795628	0.2766990	0.020945602
## [1245]	{rolls/buns, yogurt}	=> {pastry}	0.005795628	0.1686391	0.034367056
## [1246]	{pastry, yogurt}	=> {other vegetables}	0.006609049	0.3735632	0.017691917
## [1247]	{other vegetables, pastry}	=> {yogurt}	0.006609049	0.2927928	0.022572445
## [1248]	{other vegetables, yogurt}	=> {pastry}	0.006609049	0.1522248	0.043416370
## [1249]	{pastry, yogurt}	=> {whole milk}	0.009150991	0.5172414	0.017691917
## [1250]	{pastry, whole milk}	=> {yogurt}	0.009150991	0.2752294	0.033248602
## [1251]	{whole milk, yogurt}	=> {pastry}	0.009150991	0.1633394	0.056024403
## [1252]	{pastry,				

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##      rolls/buns}          => {other vegetables}          0.006100661  0.2912621  0.020945602
## [1253] {other vegetables, => {rolls/buns}              0.006100661  0.2702703  0.022572445
##      pastry}                => {pastry}                  0.006100661  0.1431981  0.042602949
## [1254] {other vegetables, => {whole milk}               0.008540925  0.4077670  0.020945602
##      rolls/buns}              => {rolls/buns}             0.008540925  0.2568807  0.033248602
## [1255] {pastry,                 => {pastry}                  0.008540925  0.1508079  0.056634469
##      rolls/buns}              => {whole milk}              0.010574479  0.4684685  0.022572445
## [1256] {pastry,                 => {other vegetables}        0.010574479  0.3180428  0.033248602
##      whole milk}                => {pastry}                  0.010574479  0.1413043  0.074834774
## [1257] {rolls/buns,                 => {whole milk}              0.005083884  0.3759398  0.013523132
##      whole milk}                => {other vegetables}        0.005083884  0.1760563  0.028876462
## [1258] {other vegetables,                 => {pastry}                  0.005083884  0.2049180  0.024809354
##      pastry}                      => {bottled water}            0.005897306  0.4360902  0.013523132
## [1259] {pastry,                 => {other vegetables}        0.005897306  0.1933333  0.030503305
##      whole milk}                => {bottled water}            0.005897306  0.1715976  0.034367056
## [1260] {other vegetables,                 => {citrus fruit}              0.005693950  0.2857143  0.019928826
##      whole milk}                => {whole milk}              0.005693950  0.3218391  0.017691917
## [1261] {bottled water,                 => {bottled water}            0.005693950  0.2705314  0.021047280
##      citrus fruit}                => {citrus fruit}              0.006304016  0.3163265  0.019928826
## [1262] {citrus fruit,                 => {root vegetables}         0.006304016  0.2910798  0.021657346
##      other vegetables}              => {tropical fruit}           0.006304016  0.2152778  0.029283172
## [1263] {bottled water,                 => {citrus fruit}              0.009049314  0.4540816  0.019928826
##      other vegetables}              => {other vegetables}        0.009049314  0.3133803  0.028876462
## [1264] {bottled water,                 => {tropical fruit}           0.009049314  0.2521246  0.035892222
##      citrus fruit}                => {citrus fruit}              0.009049314  0.4540816  0.019928826
## [1265] {citrus fruit,                 => {whole milk}               0.009049314  0.2966667  0.030503305
##      whole milk}                      => {tropical fruit}           0.009049314  0.2139423  0.042297916
## [1266] {bottled water,                 => {citrus fruit}              0.009049314  0.1933333  0.030503305
##      whole milk}                => {citrus fruit}              0.009049314  0.1715976  0.034367056
## [1267] {citrus fruit,                 => {root vegetables}         0.009049314  0.1508079  0.056634469
##      tropical fruit}                => {tropical fruit}           0.009049314  0.1290360  0.0400000
## [1268] {citrus fruit,                 => {citrus fruit}              0.009049314  0.1082747  0.033248602
##      root vegetables}              => {citrus fruit}              0.009049314  0.0875134  0.0264000
## [1269] {root vegetables,                 => {tropical fruit}           0.009049314  0.0667521  0.019928826
##      tropical fruit}                => {citrus fruit}              0.009049314  0.0460908  0.013523132
## [1270] {citrus fruit,                 => {yogurt}                  0.009049314  0.0253295  0.0099999
##      tropical fruit}                => {tropical fruit}           0.009049314  0.0045672  0.0000000
## [1271] {citrus fruit,                 => {yogurt}                  0.009049314  0.0253295  0.0099999
##      yogurt}                      => {tropical fruit}           0.009049314  0.0045672  0.0000000
## [1272] {tropical fruit,                 => {citrus fruit}              0.009049314  0.0253295  0.0099999
##      yogurt}                      => {citrus fruit}              0.009049314  0.0045672  0.0000000
## [1273] {citrus fruit,                 => {citrus fruit}              0.009049314  0.0253295  0.0099999
##      tropical fruit}                => {other vegetables}        0.009049314  0.0045672  0.0000000
## [1274] {citrus fruit,                 => {tropical fruit}           0.009049314  0.0253295  0.0099999
##      other vegetables}              => {tropical fruit}           0.009049314  0.0045672  0.0000000
## [1275] {other vegetables,                 => {citrus fruit}              0.009049314  0.0253295  0.0099999
##      tropical fruit}                => {citrus fruit}              0.009049314  0.0045672  0.0000000
## [1276] {citrus fruit,                 => {whole milk}               0.009049314  0.0253295  0.0099999
##      tropical fruit}                => {tropical fruit}           0.009049314  0.0045672  0.0000000
## [1277] {citrus fruit,                 => {tropical fruit}           0.009049314  0.0253295  0.0099999
##      whole milk}                      => {citrus fruit}              0.009049314  0.0045672  0.0000000
## [1278] {tropical fruit,                 => {citrus fruit}              0.009049314  0.0253295  0.0099999
##      whole milk}                      => {tropical fruit}           0.009049314  0.0045672  0.0000000
## [1279] {citrus fruit,

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##      root vegetables}          => {other vegetables}          0.010371124  0.5862069  0.017691917 :
## [1280] {citrus fruit,           => {root vegetables}          0.010371124  0.3591549  0.028876462 :
##          other vegetables}       => {citrus fruit}           0.010371124  0.2188841  0.047381800 :
## [1281] {other vegetables,      => {whole milk}              0.009150991  0.5172414  0.017691917 :
##          root vegetables}        => {root vegetables}         0.009150991  0.3000000  0.030503305 :
## [1282] {citrus fruit,           => {citrus fruit}             0.009150991  0.1871102  0.048906965 :
##          root vegetables}        => {rolls/buns}              0.005795628  0.2676056  0.021657346 :
## [1283] {citrus fruit,           => {yogurt}                  0.005795628  0.3454545  0.016776817 :
##          whole milk}              => {citrus fruit}             0.005795628  0.1686391  0.034367056 :
## [1284] {root vegetables,        => {other vegetables}         0.007625826  0.3521127  0.021657346 :
##          whole milk}              => {yogurt}                  0.007625826  0.2640845  0.028876462 :
## [1285] {citrus fruit,           => {citrus fruit}             0.007625826  0.1756440  0.043416370 :
##          yogurt}                 => {whole milk}              0.010269446  0.4741784  0.021657346 :
## [1286] {citrus fruit,           => {yogurt}                  0.010269446  0.3366667  0.030503305 :
##          rolls/buns}              => {citrus fruit}             0.010269446  0.1833031  0.056024403 :
## [1287] {rolls/buns,            => {other vegetables}         0.005998983  0.3575758  0.016776817 :
##          yogurt}                 => {rolls/buns}              0.005998983  0.2077465  0.028876462 :
## [1288] {citrus fruit,           => {citrus fruit}             0.005998983  0.1408115  0.042602949 :
##          yogurt}                 => {whole milk}              0.007219115  0.4303030  0.016776817 :
## [1289] {citrus fruit,           => {rolls/buns}              0.007219115  0.2366667  0.030503305 :
##          other vegetables}        => {citrus fruit}             0.007219115  0.1274686  0.056634469 :
## [1290] {other vegetables,      => {whole milk}              0.013014743  0.4507042  0.028876462 :
##          yogurt}                 => {other vegetables}         0.013014743  0.4266667  0.030503305 :
## [1291] {citrus fruit,           => {citrus fruit}             0.013014743  0.1739130  0.074834774 :
##          yogurt}                 => {soda}                   0.005693950  0.3636364  0.015658363 :
## [1292] {citrus fruit,           => {sausage}                 0.005693950  0.2314050  0.024605999 :
##          whole milk}              => {shopping bags}           0.005693950  0.2343096  0.024300966 :
## [1293] {whole milk,             => {sausage}                 0.005693950  0.1871102  0.048906965 :
##          yogurt}                 => {shopping bags}           0.005693950  0.1686391  0.034367056 :
## [1294] {citrus fruit,           => {other vegetables}         0.005693950  0.3521127  0.021657346 :
##          rolls/buns}              => {citrus fruit}             0.005693950  0.1756440  0.043416370 :
## [1295] {citrus fruit,           => {whole milk}              0.005693950  0.4741784  0.021657346 :
##          other vegetables}        => {rolls/buns}              0.005693950  0.3366667  0.030503305 :
## [1296] {other vegetables,      => {citrus fruit}             0.005693950  0.1408115  0.042602949 :
##          rolls/buns}              => {whole milk}              0.007219115  0.4303030  0.016776817 :
## [1297] {citrus fruit,           => {rolls/buns}              0.007219115  0.2366667  0.030503305 :
##          rolls/buns}              => {citrus fruit}             0.007219115  0.1274686  0.056634469 :
## [1298] {citrus fruit,           => {whole milk}              0.007219115  0.4507042  0.028876462 :
##          whole milk}              => {rolls/buns}              0.007219115  0.4266667  0.030503305 :
## [1299] {rolls/buns,            => {citrus fruit}             0.007219115  0.1739130  0.074834774 :
##          whole milk}              => {whole milk}              0.013014743  0.3636364  0.015658363 :
## [1300] {citrus fruit,           => {other vegetables}         0.013014743  0.2314050  0.024605999 :
##          other vegetables}        => {citrus fruit}             0.013014743  0.1686391  0.034367056 :
## [1301] {citrus fruit,           => {whole milk}              0.013014743  0.3521127  0.021657346 :
##          whole milk}              => {other vegetables}         0.013014743  0.1756440  0.043416370 :
## [1302] {other vegetables,      => {citrus fruit}             0.013014743  0.4741784  0.021657346 :
##          whole milk}              => {whole milk}              0.005693950  0.3366667  0.030503305 :
## [1303] {sausage,                => {soda}                   0.005693950  0.1408115  0.042602949 :
##          shopping bags}           => {sausage}                 0.005693950  0.1871102  0.048906965 :
## [1304] {shopping bags,          => {shopping bags}           0.005693950  0.1686391  0.034367056 :
##          soda}                   => {sausage}                 0.005693950  0.2314050  0.024605999 :
## [1305] {sausage,                => {shopping bags}           0.005693950  0.1274686  0.056634469 :
##          soda}                   => {soda}                   0.005693950  0.2343096  0.024300966 :
## [1306] {sausage,

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##      shopping bags}          => {rolls/buns}          0.005998983  0.3831169  0.015658363 :
## [1307] {rolls/buns,          => {sausage}           0.005998983  0.3072917  0.019522115 :
##      shopping bags}          => {shopping bags}        0.005998983  0.1960133  0.030604982 :
## [1308] {rolls/buns,          => {other vegetables}    0.005388917  0.3441558  0.015658363 :
##      sausage}                => {sausage}            0.005388917  0.2324561  0.023182511 :
## [1309] {sausage,             => {shopping bags}        0.005388917  0.2000000  0.026944586 :
##      shopping bags}          => {other vegetables}    0.006609049  0.5158730  0.012811388 :
## [1310] {other vegetables,   => {root vegetables}       0.006609049  0.2850877  0.023182511 :
##      shopping bags}          => {shopping bags}        0.006609049  0.1394850  0.047381800 :
## [1311] {other vegetables,   => {other vegetables}       0.005287239  0.4126984  0.012811388 :
##      sausage}                => {sausage}             0.005287239  0.2157676  0.024504321 :
## [1312] {root vegetables,    => {shopping bags}        0.005287239  0.1081081  0.048906965 :
##      shopping bags}          => {whole milk}           0.006304016  0.2561983  0.024605999 :
## [1313] {other vegetables,   => {rolls/buns}            0.006304016  0.3229167  0.019522115 :
##      shopping bags}          => {soda}                 0.006304016  0.1644562  0.038332486 :
## [1314] {other vegetables,   => {shopping bags}        0.005388917  0.2190083  0.024605999 :
##      root vegetables}         => {other vegetables}    0.005388917  0.2324561  0.023182511 :
## [1315] {root vegetables,    => {shopping bags}        0.005388917  0.1645963  0.032740214 :
##      shopping bags}          => {whole milk}           0.006812405  0.2768595  0.024605999 :
## [1316] {shopping bags,       => {soda}                 0.006812405  0.2780083  0.024504321 :
##      whole milk}              => {shopping bags}        0.006812405  0.1700508  0.040061007 :
## [1317] {root vegetables,    => {other vegetables}       0.005388917  0.3533333  0.015251652 :
##      whole milk}              => {soda}                 0.005388917  0.2324561  0.023182511 :
## [1318] {shopping bags,       => {shopping bags}        0.005388917  0.1241218  0.043416370 :
##      soda}                   => {whole milk}           0.005287239  0.3466667  0.015251652 :
## [1319] {rolls/buns,          => {yogurt}               0.005287239  0.2157676  0.024504321 :
##      shopping bags}          => {shopping bags}        0.005287239  0.2708333  0.019522115 :
## [1320] {rolls/buns,          => {other vegetables}    0.005287239  0.1700508  0.040061007 :
##      soda}                   => {soda}                 0.005287239  0.2324561  0.023182511 :
## [1321] {shopping bags,       => {shopping bags}        0.005388917  0.1081081  0.048906965 :
##      soda}                   => {other vegetables}    0.005388917  0.2157676  0.024504321 :
## [1322] {other vegetables,   => {soda}                 0.005388917  0.1644562  0.038332486 :
##      shopping bags}          => {shopping bags}        0.005388917  0.2324561  0.023182511 :
## [1323] {other vegetables,   => {shopping bags}        0.005388917  0.1645963  0.032740214 :
##      soda}                   => {whole milk}           0.006812405  0.2768595  0.024605999 :
## [1324] {shopping bags,       => {soda}                 0.006812405  0.2780083  0.024504321 :
##      soda}                   => {shopping bags}        0.006812405  0.1700508  0.040061007 :
## [1325] {shopping bags,       => {other vegetables}    0.005388917  0.3533333  0.015251652 :
##      whole milk}              => {soda}                 0.005388917  0.2324561  0.023182511 :
## [1326] {soda,                 => {shopping bags}        0.005388917  0.1081081  0.048906965 :
##      whole milk}              => {other vegetables}    0.005388917  0.2157676  0.024504321 :
## [1327] {shopping bags,       => {yogurt}               0.005388917  0.1644562  0.038332486 :
##      yogurt}                 => {shopping bags}        0.005388917  0.2324561  0.023182511 :
## [1328] {other vegetables,   => {yogurt}               0.005388917  0.1241218  0.043416370 :
##      shopping bags}          => {whole milk}           0.005287239  0.3466667  0.015251652 :
## [1329] {other vegetables,   => {yogurt}               0.005287239  0.2157676  0.024504321 :
##      yogurt}                 => {shopping bags}        0.005287239  0.2708333  0.019522115 :
## [1330] {shopping bags,       => {whole milk}           0.005287239  0.1700508  0.040061007 :
##      yogurt}                 => {other vegetables}    0.005287239  0.2324561  0.023182511 :
## [1331] {shopping bags,       => {yogurt}               0.005287239  0.1081081  0.048906965 :
##      whole milk}              => {shopping bags}        0.005287239  0.2157676  0.024504321 :
## [1332] {rolls/buns,          => {other vegetables}    0.005287239  0.2708333  0.019522115 :
##      shopping bags}          => {other vegetables}    0.005287239  0.1700508  0.040061007 :
## [1333] {other vegetables,

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##      shopping bags}          => {rolls/buns}          0.005287239  0.2280702  0.023182511
## [1334] {other vegetables,   => {shopping bags}          0.005287239  0.1241050  0.042602949
##           rolls/buns}        => {whole milk}          0.005287239  0.2708333  0.019522115
## [1335] {rolls/buns,         => {rolls/buns}          0.005287239  0.2157676  0.024504321
##           shopping bags}     => {whole milk}          0.007625826  0.3289474  0.023182511
## [1336] {shopping bags,     => {other vegetables}    0.007625826  0.3112033  0.024504321
##           whole milk}        => {shopping bags}          0.007625826  0.1019022  0.074834774
## [1337] {other vegetables,   => {other vegetables}    0.005083884  0.4237288  0.011997966
##           shopping bags}     => {bottled water}          0.005083884  0.1886792  0.026944586
## [1338] {shopping bags,     => {sausage}              0.005083884  0.2049180  0.024809354
##           whole milk}        => {tropical fruit}        0.005998983  0.4306569  0.013929842
## [1339] {other vegetables,   => {other vegetables}    0.005998983  0.2226415  0.026944586
##           whole milk}        => {sausage}              0.005998983  0.1671388  0.035892222
## [1340] {bottled water,      => {whole milk}          0.007219115  0.5182482  0.013929842
##           sausage}            => {tropical fruit}        0.007219115  0.2414966  0.029893238
## [1341] {other vegetables,   => {sausage}              0.007219115  0.1706731  0.042297916
##           sausage}             => {yogurt}               0.005185562  0.3469388  0.014946619
## [1342] {bottled water,      => {root vegetables}    0.005185562  0.2642487  0.019623793
##           other vegetables}   => {sausage}              0.005185562  0.2007874  0.025826131
## [1343] {sausage,            => {other vegetables}    0.006812405  0.4557823  0.014946619
##           tropical fruit}     => {root vegetables}    0.006812405  0.2528302  0.026944586
## [1344] {other vegetables,   => {sausage}              0.006812405  0.1437768  0.047381800
##           sausage}             => {whole milk}          0.007727504  0.5170068  0.014946619
## [1345] {other vegetables,   => {root vegetables}    0.007727504  0.2585034  0.029893238
##           tropical fruit}     => {sausage}              0.007727504  0.1580042  0.048906965
## [1346] {sausage,            => {yogurt}               0.005592272  0.2301255  0.024300966
##           tropical fruit}     => {soda}                 0.005592272  0.2849741  0.019623793
## [1347] {sausage,            => {soda}                 0.005592272  0.2849741  0.019623793
##           whole milk}          => {tropical fruit}        0.005592272  0.2849741  0.019623793
## [1348] {tropical fruit,     => {sausage}              0.005592272  0.2849741  0.019623793
##           whole milk}          => {yogurt}               0.005592272  0.2849741  0.019623793
## [1349] {root vegetables,    => {root vegetables}    0.005592272  0.2849741  0.019623793
##           sausage}              => {sausage}              0.005592272  0.2849741  0.019623793
## [1350] {sausage,            => {yogurt}               0.005592272  0.2849741  0.019623793
##           yogurt}               => {root vegetables}    0.005592272  0.2849741  0.019623793
## [1351] {root vegetables,    => {sausage}              0.005592272  0.2849741  0.019623793
##           yogurt}               => {other vegetables}    0.005592272  0.2849741  0.019623793
## [1352] {root vegetables,    => {sausage}              0.005592272  0.2849741  0.019623793
##           sausage}              => {other vegetables}    0.005592272  0.2849741  0.019623793
## [1353] {other vegetables,   => {root vegetables}    0.005592272  0.2849741  0.019623793
##           sausage}              => {sausage}              0.005592272  0.2849741  0.019623793
## [1354] {other vegetables,   => {root vegetables}    0.005592272  0.2849741  0.019623793
##           root vegetables}     => {sausage}              0.005592272  0.2849741  0.019623793
## [1355] {root vegetables,    => {sausage}              0.005592272  0.2849741  0.019623793
##           sausage}              => {whole milk}          0.005592272  0.2849741  0.019623793
## [1356] {sausage,            => {root vegetables}    0.005592272  0.2849741  0.019623793
##           whole milk}           => {sausage}              0.005592272  0.2849741  0.019623793
## [1357] {root vegetables,    => {yogurt}               0.005592272  0.2849741  0.019623793
##           whole milk}           => {soda}                 0.005592272  0.2849741  0.019623793
## [1358] {sausage,            => {yogurt}               0.005592272  0.2849741  0.019623793
##           soda}                  => {soda}                 0.005592272  0.2849741  0.019623793
## [1359] {sausage,            => {soda}                 0.005592272  0.2849741  0.019623793
##           yogurt}                => {soda}                 0.005592272  0.2849741  0.019623793
## [1360] {soda,

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## yogurt}	=> {sausage}	0.005592272	0.2044610	0.027351296
## [1361] {sausage, ## soda}	=> {rolls/buns}	0.009659380	0.3974895	0.024300966
## [1362] {rolls/buns, ## sausage}	=> {soda}	0.009659380	0.3156146	0.030604982
## [1363] {rolls/buns, ## soda}	=> {sausage}	0.009659380	0.2519894	0.038332486
## [1364] {sausage, ## soda}	=> {other vegetables}	0.007219115	0.2970711	0.024300966
## [1365] {other vegetables, ## sausage}	=> {soda}	0.007219115	0.2679245	0.026944586
## [1366] {other vegetables, ## soda}	=> {sausage}	0.007219115	0.2204969	0.032740214
## [1367] {sausage, ## soda}	=> {whole milk}	0.006710727	0.2761506	0.024300966
## [1368] {sausage, ## whole milk}	=> {soda}	0.006710727	0.2244898	0.029893238
## [1369] {soda, ## whole milk}	=> {sausage}	0.006710727	0.1675127	0.040061007
## [1370] {sausage, ## yogurt}	=> {rolls/buns}	0.005998983	0.3056995	0.019623793
## [1371] {rolls/buns, ## sausage}	=> {yogurt}	0.005998983	0.1960133	0.030604982
## [1372] {rolls/buns, ## yogurt}	=> {sausage}	0.005998983	0.1745562	0.034367056
## [1373] {sausage, ## yogurt}	=> {other vegetables}	0.008134215	0.4145078	0.019623793
## [1374] {other vegetables, ## sausage}	=> {yogurt}	0.008134215	0.3018868	0.026944586
## [1375] {other vegetables, ## yogurt}	=> {sausage}	0.008134215	0.1873536	0.043416370
## [1376] {sausage, ## yogurt}	=> {whole milk}	0.008744281	0.4455959	0.019623793
## [1377] {sausage, ## whole milk}	=> {yogurt}	0.008744281	0.2925170	0.029893238
## [1378] {whole milk, ## yogurt}	=> {sausage}	0.008744281	0.1560799	0.056024403
## [1379] {rolls/buns, ## sausage}	=> {other vegetables}	0.008845958	0.2890365	0.030604982
## [1380] {other vegetables, ## sausage}	=> {rolls/buns}	0.008845958	0.3283019	0.026944586
## [1381] {other vegetables, ## rolls/buns}	=> {sausage}	0.008845958	0.2076372	0.042602949
## [1382] {rolls/buns, ## sausage}	=> {whole milk}	0.009354347	0.3056478	0.030604982
## [1383] {sausage, ## whole milk}	=> {rolls/buns}	0.009354347	0.3129252	0.029893238
## [1384] {rolls/buns, ## whole milk}	=> {sausage}	0.009354347	0.1651706	0.056634469
## [1385] {other vegetables, ## sausage}	=> {whole milk}	0.010167768	0.3773585	0.026944586
## [1386] {sausage, ## whole milk}	=> {other vegetables}	0.010167768	0.3401361	0.029893238
## [1387] {other vegetables,				

## whole milk}	=> {sausage}	0.010167768	0.1358696	0.074834774
## [1388] {bottled water,	=> {soda}	0.005185562	0.2802198	0.018505338
## tropical fruit}	=> {tropical fruit}	0.005185562	0.1789474	0.028978139
## [1389] {bottled water,	=> {bottled water}	0.005185562	0.2487805	0.020843925
## soda}	=> {yogurt}	0.007117438	0.3846154	0.018505338
## [1390] {soda,	=> {tropical fruit}	0.007117438	0.3097345	0.022979156
## tropical fruit}	=> {bottled water}	0.007117438	0.2430556	0.029283172
## [1391] {bottled water,	=> {rolls/buns}	0.005388917	0.2912088	0.018505338
## tropical fruit}	=> {tropical fruit}	0.005388917	0.2226891	0.024199288
## [1392] {bottled water,	=> {bottled water}	0.005388917	0.2190083	0.024605999
## yogurt}	=> {other vegetables}	0.006202339	0.3351648	0.018505338
## [1393] {tropical fruit,	=> {tropical fruit}	0.006202339	0.2500000	0.024809354
## yogurt}	=> {bottled water}	0.006202339	0.1728045	0.035892222
## [1394] {bottled water,	=> {whole milk}	0.008032537	0.4340659	0.018505338
## tropical fruit}	=> {tropical fruit}	0.008032537	0.2337278	0.034367056
## [1395] {bottled water,	=> {bottled water}	0.008032537	0.1899038	0.042297916
## rolls/buns}	=> {other vegetables}	0.007015760	0.4480519	0.015658363
## [1396] {rolls/buns,	=> {root vegetables}	0.007015760	0.2827869	0.024809354
## tropical fruit}	=> {bottled water}	0.007015760	0.1480687	0.047381800
## [1397] {bottled water,	=> {whole milk}	0.007320793	0.4675325	0.015658363
## tropical fruit}	=> {root vegetables}	0.007320793	0.2130178	0.034367056
## [1400] {bottled water,	=> {bottled water}	0.007320793	0.1496881	0.048906965
## tropical fruit}	=> {whole milk}	0.007422471	0.2561404	0.028978139
## [1401] {bottled water,	=> {root vegetables}	0.007422471	0.3230088	0.022979156
## whole milk}	=> {yogurt}	0.007422471	0.2713755	0.027351296
## [1402] {tropical fruit,	=> {soda}	0.006812405	0.2350877	0.028978139
## whole milk}	=> {bottled water}	0.006812405	0.2815126	0.024199288
## [1403] {bottled water,	=> {rolls/buns}	0.006812405	0.2815126	0.024199288
## root vegetables}	=> {soda}	0.006812405	0.2815126	0.024199288
## [1404] {bottled water,				
## other vegetables}				
## [1405] {other vegetables,				
## root vegetables}				
## [1406] {bottled water,				
## root vegetables}				
## [1407] {bottled water,				
## whole milk}				
## [1408] {root vegetables,				
## whole milk}				
## [1409] {bottled water,				
## soda}				
## [1410] {bottled water,				
## yogurt}				
## [1411] {soda,				
## yogurt}				
## [1412] {bottled water,				
## soda}				
## [1413] {bottled water,				
## rolls/buns}				
## [1414] {rolls/buns,				

## [1415] {bottled water,	=> {bottled water}	0.006812405	0.1777188	0.038332486
## [1416] {bottled water,	=> {other vegetables}	0.005693950	0.1964912	0.028978139
## [1417] {other vegetables,	=> {soda}	0.005693950	0.2295082	0.024809354
## [1418] {bottled water,	=> {bottled water}	0.005693950	0.1739130	0.032740214
## [1419] {bottled water,	=> {whole milk}	0.007524148	0.2596491	0.028978139
## [1420] {soda,	=> {soda}	0.007524148	0.2189349	0.034367056
## [1421] {bottled water,	=> {bottled water}	0.007524148	0.1878173	0.040061007
## [1422] {bottled water,	=> {rolls/buns}	0.007117438	0.3097345	0.022979156
## [1423] {rolls/buns,	=> {yogurt}	0.007117438	0.2941176	0.024199288
## [1424] {bottled water,	=> {bottled water}	0.007117438	0.2071006	0.034367056
## [1425] {bottled water,	=> {other vegetables}	0.008134215	0.3539823	0.022979156
## [1426] {other vegetables,	=> {yogurt}	0.008134215	0.3278689	0.024809354
## [1427] {bottled water,	=> {bottled water}	0.008134215	0.1873536	0.043416370
## [1428] {bottled water,	=> {whole milk}	0.009659380	0.4203540	0.022979156
## [1429] {whole milk,	=> {yogurt}	0.009659380	0.2810651	0.034367056
## [1430] {bottled water,	=> {bottled water}	0.009659380	0.1724138	0.056024403
## [1431] {bottled water,	=> {other vegetables}	0.007320793	0.3025210	0.024199288
## [1432] {other vegetables,	=> {rolls/buns}	0.007320793	0.2950820	0.024809354
## [1433] {bottled water,	=> {bottled water}	0.007320793	0.1718377	0.042602949
## [1434] {bottled water,	=> {whole milk}	0.008744281	0.3613445	0.024199288
## [1435] {rolls/buns,	=> {rolls/buns}	0.008744281	0.2544379	0.034367056
## [1436] {bottled water,	=> {bottled water}	0.008744281	0.1543986	0.056634469
## [1437] {bottled water,	=> {whole milk}	0.010777834	0.4344262	0.024809354
## [1438] {other vegetables,	=> {other vegetables}	0.010777834	0.3136095	0.034367056
## [1439] {root vegetables,	=> {bottled water}	0.010777834	0.1440217	0.074834774
## [1440] {tropical fruit,	=> {yogurt}	0.008134215	0.3864734	0.021047280
## [1441] {root vegetables,	=> {root vegetables}	0.008134215	0.2777778	0.029283172

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##      yogurt}          => {tropical fruit}          0.008134215  0.3149606  0.025826131
## [1442] {root vegetables, => {rolls/buns}           0.005897306  0.2801932  0.021047280
##        tropical fruit}          => {root vegetables}          0.005897306  0.2396694  0.024605999
## [1443] {rolls/buns,          => {tropical fruit}          0.005897306  0.2426778  0.024300966
##        tropical fruit}          => {other vegetables}          0.012302999  0.5845411  0.021047280
## [1444] {rolls/buns,          => {root vegetables}          0.012302999  0.3427762  0.035892222
##        root vegetables}          => {tropical fruit}          0.012302999  0.2596567  0.047381800
## [1445] {root vegetables,          => {whole milk}           0.011997966  0.5700483  0.021047280
##        tropical fruit}          => {root vegetables}          0.011997966  0.2836538  0.042297916
## [1446] {other vegetables,          => {tropical fruit}          0.011997966  0.2453222  0.048906965
##        tropical fruit}          => {yogurt}                0.006609049  0.3170732  0.020843925
## [1447] {other vegetables,          => {soda}                 0.006609049  0.2256944  0.029283172
##        root vegetables}          => {tropical fruit}          0.006609049  0.2416357  0.027351296
## [1448] {root vegetables,          => {rolls/buns}           0.005388917  0.2585366  0.020843925
##        tropical fruit}          => {soda}                 0.005388917  0.2190083  0.024605999
## [1449] {tropical fruit,          => {tropical fruit}          0.005388917  0.1405836  0.038332486
##        whole milk}             => {other vegetables}          0.007219115  0.3463415  0.020843925
## [1450] {root vegetables,          => {soda}                 0.007219115  0.2011331  0.035892222
##        whole milk}             => {tropical fruit}          0.007219115  0.2204969  0.032740214
## [1451] {soda,                  => {whole milk}           0.007829181  0.3756098  0.020843925
##        tropical fruit}          => {soda}                 0.007829181  0.1850962  0.042297916
## [1452] {tropical fruit,          => {tropical fruit}          0.007829181  0.1954315  0.040061007
##        yogurt}                => {rolls/buns}           0.008744281  0.2986111  0.029283172
## [1453] {soda,                  => {yogurt}               0.008744281  0.3553719  0.024605999
##        yogurt}                => {tropical fruit}          0.008744281  0.2544379  0.034367056
## [1454] {soda,                  => {other vegetables}          0.012302999  0.4201389  0.029283172
##        tropical fruit}          => {yogurt}               0.012302999  0.3427762  0.035892222
## [1455] {rolls/buns,          => {tropical fruit}          0.012302999  0.2544379  0.034367056
##        tropical fruit}          => {soda}                 0.005388917  0.2190083  0.024605999
## [1456] {rolls/buns,          => {tropical fruit}          0.005388917  0.1405836  0.038332486
##        soda}                  => {other vegetables}          0.007219115  0.3463415  0.020843925
## [1457] {soda,                  => {soda}                 0.007219115  0.2011331  0.035892222
##        tropical fruit}          => {tropical fruit}          0.007219115  0.2204969  0.032740214
## [1458] {other vegetables,          => {soda}                 0.007829181  0.3756098  0.020843925
##        tropical fruit}          => {whole milk}           0.007829181  0.1850962  0.042297916
## [1459] {other vegetables,          => {tropical fruit}          0.007829181  0.1954315  0.040061007
##        soda}                  => {rolls/buns}           0.008744281  0.2986111  0.029283172
## [1460] {soda,                  => {yogurt}               0.008744281  0.3553719  0.024605999
##        tropical fruit}          => {tropical fruit}          0.008744281  0.2544379  0.034367056
## [1461] {tropical fruit,          => {other vegetables}          0.012302999  0.4201389  0.029283172
##        whole milk}             => {yogurt}               0.012302999  0.3427762  0.035892222
## [1462] {soda,                  => {tropical fruit}          0.012302999  0.2544379  0.034367056
##        whole milk}             => {rolls/buns}           0.008744281  0.2986111  0.029283172
## [1463] {tropical fruit,          => {yogurt}               0.008744281  0.3553719  0.024605999
##        yogurt}                => {tropical fruit}          0.008744281  0.2544379  0.034367056
## [1464] {rolls/buns,          => {yogurt}               0.008744281  0.3553719  0.024605999
##        tropical fruit}          => {tropical fruit}          0.008744281  0.2544379  0.034367056
## [1465] {rolls/buns,          => {yogurt}               0.008744281  0.3553719  0.024605999
##        yogurt}                => {tropical fruit}          0.008744281  0.2544379  0.034367056
## [1466] {tropical fruit,          => {other vegetables}          0.012302999  0.4201389  0.029283172
##        yogurt}                => {yogurt}               0.012302999  0.3427762  0.035892222
## [1467] {other vegetables,          => {yogurt}               0.012302999  0.3427762  0.035892222
##        tropical fruit}          => {yogurt}               0.012302999  0.3427762  0.035892222
## [1468] {other vegetables,

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##      yogurt}          => {tropical fruit}          0.012302999  0.2833724  0.043416370
## [1469] {tropical fruit,    => {whole milk}           0.015149975  0.5173611  0.029283172
##      yogurt}          => {yogurt}                0.015149975  0.3581731  0.042297916
## [1470] {tropical fruit,    => {tropical fruit}          0.015149975  0.2704174  0.056024403
##      whole milk}         => {other vegetables}   0.007829181  0.3181818  0.024605999
## [1471] {whole milk,       => {rolls/buns}           0.007829181  0.2181303  0.035892222
##      yogurt}          => {tropical fruit}          0.007829181  0.1837709  0.042602949
## [1472] {rolls/buns,      => {whole milk}           0.010981190  0.4462810  0.024605999
##      tropical fruit}     => {rolls/buns}           0.010981190  0.2596154  0.042297916
## [1473] {other vegetables,=> {tropical fruit}          0.010981190  0.1938959  0.056634469
##      tropical fruit}     => {whole milk}           0.017081851  0.4759207  0.035892222
## [1474] {other vegetables,=> {other vegetables}   0.017081851  0.4038462  0.042297916
##      rolls/buns}         => {tropical fruit}          0.017081851  0.2282609  0.074834774
## [1475] {rolls/buns,       => {whole milk}           0.008235892  0.4426230  0.018607016
##      tropical fruit}     => {other vegetables}   0.008235892  0.1738197  0.047381800
## [1476] {tropical fruit,    => {root vegetables}   0.008235892  0.2515528  0.032740214
##      whole milk}         => {soda}                  0.008134215  0.4371585  0.018607016
## [1477] {rolls/buns,       => {whole milk}           0.008134215  0.1663202  0.048906965
##      whole milk}         => {other vegetables}   0.008134215  0.2030457  0.040061007
## [1478] {other vegetables,=> {root vegetables}   0.007219115  0.2795276  0.025826131
##      tropical fruit}     => {rolls/buns}           0.007219115  0.2970711  0.024300966
## [1479] {tropical fruit,    => {yogurt}                0.007219115  0.2100592  0.034367056
##      whole milk}         => {root vegetables}   0.012913066  0.5000000  0.025826131
## [1480] {other vegetables,=> {other vegetables}   0.012913066  0.2725322  0.047381800
##      whole milk}         => {yogurt}                0.012913066  0.2974239  0.043416370
## [1481] {root vegetables,    => {root vegetables}   0.014539908  0.5629921  0.025826131
##      soda}                => {whole milk}           0.014539908  0.2972973  0.048906965
## [1482] {other vegetables,=> {root vegetables}   0.014539908  0.2972973  0.048906965
##      root vegetables}     => {soda}                  0.008235892  0.1738197  0.047381800
## [1483] {other vegetables,=> {root vegetables}   0.008235892  0.2515528  0.032740214
##      soda}                 => {whole milk}           0.008134215  0.4371585  0.018607016
## [1484] {root vegetables,    => {soda}                  0.008134215  0.1663202  0.048906965
##      soda}                 => {root vegetables}   0.008134215  0.2030457  0.040061007
## [1485] {root vegetables,    => {root vegetables}   0.007219115  0.2795276  0.025826131
##      whole milk}          => {yogurt}                0.007219115  0.2970711  0.024300966
## [1486] {soda,              => {soda}                  0.007219115  0.2100592  0.034367056
##      whole milk}          => {root vegetables}   0.012913066  0.5000000  0.025826131
## [1487] {root vegetables,    => {rolls/buns}           0.012913066  0.2725322  0.047381800
##      yogurt}               => {yogurt}                0.012913066  0.2974239  0.043416370
## [1488] {rolls/buns,        => {yogurt}                0.007219115  0.2970711  0.024300966
##      root vegetables}     => {root vegetables}   0.007219115  0.2100592  0.034367056
## [1489] {rolls/buns,        => {root vegetables}   0.012913066  0.5000000  0.025826131
##      yogurt}               => {other vegetables}  0.012913066  0.2725322  0.047381800
## [1490] {root vegetables,    => {yogurt}                0.012913066  0.2974239  0.043416370
##      yogurt}               => {root vegetables}   0.007219115  0.2100592  0.034367056
## [1491] {other vegetables,    => {yogurt}                0.012913066  0.5629921  0.025826131
##      root vegetables}     => {root vegetables}   0.012913066  0.2974239  0.043416370
## [1492] {other vegetables,    => {yogurt}                0.014539908  0.5629921  0.025826131
##      yogurt}               => {root vegetables}   0.014539908  0.2972973  0.048906965
## [1493] {root vegetables,    => {whole milk}           0.014539908  0.5629921  0.025826131
##      yogurt}               => {yogurt}                0.014539908  0.2972973  0.048906965
## [1494] {root vegetables,    => {yogurt}                0.014539908  0.2972973  0.048906965
##      whole milk}          => {whole milk}           0.014539908  0.2972973  0.048906965
## [1495] {whole milk,

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## yogurt}	=> {root vegetables}	0.014539908	0.2595281	0.056024403
## [1496] {rolls/buns,	=> {other vegetables}	0.012201322	0.5020921	0.024300966
## root vegetables}	=> {rolls/buns}	0.012201322	0.2575107	0.047381800
## [1497] {other vegetables,	=> {root vegetables}	0.012201322	0.2863962	0.042602949
## root vegetables}	=> {whole milk}	0.012709710	0.5230126	0.024300966
## [1498] {other vegetables,	=> {rolls/buns}	0.012709710	0.2598753	0.048906965
## rolls/buns}	=> {root vegetables}	0.012709710	0.2244165	0.056634469
## [1499] {rolls/buns,	=> {whole milk}	0.023182511	0.4892704	0.047381800
## root vegetables}	=> {other vegetables}	0.023182511	0.4740125	0.048906965
## [1500] {root vegetables,	=> {root vegetables}	0.023182511	0.3097826	0.074834774
## whole milk}	=> {rolls/buns}	0.008642603	0.3159851	0.027351296
## [1501] {rolls/buns,	=> {yogurt}	0.008642603	0.2254642	0.038332486
## whole milk}	=> {soda}	0.008642603	0.2514793	0.034367056
## [1502] {other vegetables,	=> {other vegetables}	0.008337570	0.3048327	0.027351296
## root vegetables}	=> {yogurt}	0.008337570	0.2546584	0.032740214
## [1503] {root vegetables,	=> {soda}	0.008337570	0.1920375	0.043416370
## whole milk}	=> {whole milk}	0.010472801	0.3828996	0.027351296
## [1504] {other vegetables,	=> {yogurt}	0.010472801	0.2614213	0.040061007
## whole milk}	=> {soda}	0.010472801	0.1869328	0.056024403
## [1505] {soda,	=> {other vegetables}	0.009862735	0.2572944	0.038332486
## yogurt}	=> {rolls/buns}	0.009862735	0.3012422	0.032740214
## [1506] {rolls/buns,	=> {soda}	0.009862735	0.2315036	0.042602949
## soda}	=> {whole milk}	0.008845958	0.2307692	0.038332486
## [1507] {rolls/buns,	=> {rolls/buns}	0.008845958	0.2208122	0.040061007
## yogurt}	=> {soda}	0.008845958	0.1561939	0.056634469
## [1508] {soda,	=> {whole milk}	0.013929842	0.4254658	0.032740214
## yogurt}	=> {other vegetables}	0.013929842	0.3477157	0.040061007
## [1509] {other vegetables,				
## soda}				
## [1510] {other vegetables,				
## yogurt}				
## [1511] {soda,				
## yogurt}				
## [1512] {soda,				
## whole milk}				
## [1513] {whole milk,				
## yogurt}				
## [1514] {rolls/buns,				
## soda}				
## [1515] {other vegetables,				
## soda}				
## [1516] {other vegetables,				
## rolls/buns}				
## [1517] {rolls/buns,				
## soda}				
## [1518] {soda,				
## whole milk}				
## [1519] {rolls/buns,				
## whole milk}				
## [1520] {other vegetables,				
## soda}				
## [1521] {soda,				
## whole milk}				
## [1522] {other vegetables,				

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##      whole milk}          => {soda}           0.013929842  0.1861413  0.074834774
## [1523] {rolls/buns,       => {other vegetables} 0.011489578  0.3343195  0.034367056
##      yogurt}             => {rolls/buns}       0.011489578  0.2646370  0.043416370
## [1524] {other vegetables,=> {yogurt}          0.011489578  0.2696897  0.042602949
##      yogurt}             => {whole milk}        0.015556685  0.4526627  0.034367056
## [1525] {other vegetables,=> {rolls/buns}        0.015556685  0.2776770  0.056024403
##      rolls/buns}           => {yogurt}          0.015556685  0.2746858  0.056634469
## [1526] {rolls/buns,       => {whole milk}        0.022267412  0.5128806  0.043416370
##      yogurt}              => {rolls/buns}        0.022267412  0.3974592  0.056024403
## [1527] {whole milk,       => {other vegetables} 0.022267412  0.2975543  0.074834774
##      yogurt}              => {yogurt}          0.022267412  0.17895272  0.4200477  0.042602949
## [1528] {rolls/buns,       => {whole milk}        0.022267412  0.3159785  0.056634469
##      whole milk}            => {rolls/buns}        0.022267412  0.2391304  0.074834774
## [1529] {other vegetables,=> {whole milk}        0.005083884  0.6172840  0.008235892
##      yogurt}              => {other vegetables} 0.005083884  0.5376344  0.009456024
## [1530] {whole milk,       => {yogurt}          0.005083884  0.4854369  0.010472801
##      yogurt}              => {whole milk}        0.005185562  0.6071429  0.008540925
## [1531] {other vegetables,=> {whole milk}        0.005185562  0.5483871  0.009456024
##      whole milk}            => {other vegetables} 0.005185562  0.3541667  0.014641586
## [1532] {other vegetables,=> {root vegetables,    0.005185562  0.2236842  0.023182511
##      rolls/buns}           => {whipped/sour cream} 0.005185562  0.1550000  0.010167768
## [1533] {rolls/buns,       => {whole milk}        0.005592272  0.5500000  0.010167768
##      whole milk}            => {other vegetables} 0.005592272  0.445556685  0.222267412
## [1534] {other vegetables,=> {yogurt}          0.005592272  0.3159785  0.056634469
##      whole milk}           => {whole milk}        0.005592272  0.2391304  0.074834774
## [1535] {fruit/vegetable juice,=> {whole milk}        0.005083884  0.6172840  0.008235892
##      other vegetables,     => {other vegetables} 0.005083884  0.5376344  0.009456024
##      yogurt}              => {whole milk}        0.005185562  0.6071429  0.008540925
## [1536] {fruit/vegetable juice,=> {yogurt}          0.005083884  0.4854369  0.010472801
##      whole milk,            => {whole milk}        0.005185562  0.5483871  0.009456024
##      yogurt}              => {other vegetables} 0.005185562  0.3541667  0.014641586
## [1537] {fruit/vegetable juice,=> {whole milk}        0.005083884  0.2283105  0.022267412
##      other vegetables,     => {other vegetables} 0.005083884  0.1550000  0.010167768
##      whole milk}           => {yogurt}          0.005185562  0.1550000  0.010167768
## [1538] {other vegetables,   => {whole milk}        0.005185562  0.6071429  0.008540925
##      whole milk,            => {other vegetables} 0.005185562  0.5483871  0.009456024
##      yogurt}              => {whole milk}        0.005185562  0.3541667  0.014641586
## [1539] {other vegetables,   => {root vegetables,   0.005185562  0.2236842  0.023182511
##      root vegetables,      => {whipped/sour cream} 0.005185562  0.1550000  0.010167768
##      whipped/sour cream}   => {whole milk}        0.005185562  0.6071429  0.008540925
## [1540] {root vegetables,    => {whole milk}        0.005185562  0.5483871  0.009456024
##      whipped/sour cream,    => {other vegetables} 0.005185562  0.3541667  0.014641586
##      whole milk}            => {root vegetables,   0.005185562  0.2236842  0.023182511
## [1541] {other vegetables,   => {whipped/sour cream, 0.005185562  0.1550000  0.010167768
##      whipped/sour cream,    => {whole milk}        0.005185562  0.6071429  0.008540925
##      whole milk}           => {other vegetables} 0.005185562  0.5483871  0.009456024
## [1542] {other vegetables,   => {root vegetables,   0.005185562  0.2236842  0.023182511
##      root vegetables,      => {whole milk}        0.005185562  0.6071429  0.008540925
##      whole milk}            => {root vegetables,   0.005185562  0.3541667  0.014641586
## [1543] {other vegetables,   => {whipped/sour cream} 0.005185562  0.1550000  0.010167768
##      whipped/sour cream,    => {whole milk}        0.005185562  0.6071429  0.008540925
##      yogurt}              => {whole milk}        0.005185562  0.5483871  0.009456024
## [1544] {whipped/sour cream,=> {whole milk}        0.005592272  0.5500000  0.010167768
##      whole milk,            => {other vegetables} 0.005592272  0.445556685  0.222267412

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##      yogurt}          => {other vegetables}    0.005592272  0.5140187  0.010879512 :
## [1545] {other vegetables,
##          whipped/sour cream,
##          whole milk}        => {yogurt}           0.005592272  0.3819444  0.014641586 :
## [1546] {other vegetables,
##          whole milk,
##          yogurt}            => {whipped/sour cream} 0.005592272  0.2511416  0.022267412 :
## [1547] {other vegetables,
##          pip fruit,
##          root vegetables}   => {whole milk}        0.005490595  0.6750000  0.008134215 :
## [1548] {pip fruit,
##          root vegetables,
##          whole milk}         => {other vegetables} 0.005490595  0.6136364  0.008947636 :
## [1549] {other vegetables,
##          pip fruit,
##          whole milk}         => {root vegetables} 0.005490595  0.4060150  0.013523132 :
## [1550] {other vegetables,
##          root vegetables,
##          whole milk}          => {pip fruit}          0.005490595  0.2368421  0.023182511 :
## [1551] {other vegetables,
##          pip fruit,
##          yogurt}              => {whole milk}        0.005083884  0.6250000  0.008134215 :
## [1552] {pip fruit,
##          whole milk,
##          yogurt}              => {other vegetables} 0.005083884  0.5319149  0.009557702 :
## [1553] {other vegetables,
##          pip fruit,
##          whole milk}          => {yogurt}           0.005083884  0.3759398  0.013523132 :
## [1554] {other vegetables,
##          whole milk,
##          yogurt}              => {pip fruit}          0.005083884  0.2283105  0.022267412 :
## [1555] {citrus fruit,
##          other vegetables,
##          root vegetables}    => {whole milk}        0.005795628  0.5588235  0.010371124 :
## [1556] {citrus fruit,
##          root vegetables,
##          whole milk}           => {other vegetables} 0.005795628  0.6333333  0.009150991 :
## [1557] {citrus fruit,
##          other vegetables,
##          whole milk}           => {root vegetables} 0.005795628  0.4453125  0.013014743 :
## [1558] {other vegetables,
##          root vegetables,
##          whole milk}            => {citrus fruit}     0.005795628  0.2500000  0.023182511 :
## [1559] {root vegetables,
##          tropical fruit,
##          yogurt}               => {whole milk}        0.005693950  0.7000000  0.008134215 :
## [1560] {root vegetables,
##          tropical fruit,
##          whole milk}             => {yogurt}           0.005693950  0.4745763  0.011997966 :
## [1561] {tropical fruit,
##          whole milk,
##          yogurt}                => {root vegetables} 0.005693950  0.3758389  0.015149975 :
## [1562] {root vegetables,
##          whole milk,

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##      yogurt}          => {tropical fruit}          0.005693950  0.3916084  0.014539908 :
## [1563] {other vegetables,          => {whole milk}           0.007015760  0.5702479  0.012302999 :
##         root vegetables,          => {other vegetables}        0.007015760  0.5847458  0.011997966 :
##         tropical fruit}          => {root vegetables}        0.007015760  0.4107143  0.017081851 :
## [1564] {root vegetables,          => {tropical fruit}           0.007015760  0.3026316  0.023182511 :
##         tropical fruit,          => {whole milk}            0.007625826  0.6198347  0.012302999 :
##         whole milk}             => {other vegetables}        0.007625826  0.5033557  0.015149975 :
## [1565] {other vegetables,          => {yogurt}                 0.007625826  0.4464286  0.017081851 :
##         tropical fruit,          => {tropical fruit}          0.007625826  0.3424658  0.022267412 :
##         whole milk}              => {whole milk}            0.007829181  0.6062992  0.012913066 :
## [1566] {other vegetables,          => {other vegetables}        0.007829181  0.5384615  0.014539908 :
##         root vegetables,          => {yogurt}                 0.007829181  0.3377193  0.023182511 :
##         whole milk}              => {root vegetables}        0.007829181  0.3515982  0.022267412 :
## [1567] {other vegetables,          => {whole milk}            0.006202339  0.5083333  0.012201322 :
##         tropical fruit,          => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         yogurt}                 => {rolls/buns}            0.006202339  0.2675439  0.023182511 :
## [1568] {tropical fruit,          => {root vegetables}        0.006202339  0.3465909  0.017895272 :
##         whole milk,              => {whole milk}             0.005998983  0.5221239  0.011489578 :
##         yogurt}                  :
## [1569] {other vegetables,          => {tropical fruit}          0.005693950  0.3916084  0.014539908 :
##         tropical fruit,          => {whole milk}            0.007015760  0.5702479  0.012302999 :
##         whole milk}             => {other vegetables}        0.007015760  0.5847458  0.011997966 :
## [1570] {other vegetables,          => {yogurt}                 0.007625826  0.4464286  0.017081851 :
##         whole milk,              => {tropical fruit}          0.007625826  0.3424658  0.022267412 :
##         yogurt}                 => {whole milk}            0.007829181  0.6062992  0.012913066 :
## [1571] {other vegetables,          => {other vegetables}        0.007829181  0.5384615  0.014539908 :
##         root vegetables,          => {yogurt}                 0.007829181  0.3377193  0.023182511 :
##         yogurt}                  => {root vegetables}        0.007829181  0.3515982  0.022267412 :
## [1572] {root vegetables,          => {whole milk}            0.006202339  0.5083333  0.012201322 :
##         whole milk,              => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         yogurt}                 => {rolls/buns}            0.006202339  0.2675439  0.023182511 :
## [1573] {other vegetables,          => {root vegetables}        0.006202339  0.3465909  0.017895272 :
##         root vegetables,          => {whole milk}             0.005998983  0.5221239  0.011489578 :
##         whole milk}              => {other vegetables}        0.006202339  0.4880000  0.012709710 :
## [1574] {other vegetables,          => {yogurt}                 0.006202339  0.3377193  0.023182511 :
##         whole milk,              => {root vegetables}          :
##         yogurt}                  => {whole milk}            0.006202339  0.5083333  0.012201322 :
## [1575] {other vegetables,          => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         rolls/buns,              => {yogurt}                 0.006202339  0.3377193  0.023182511 :
##         root vegetables}         => {root vegetables}        0.006202339  0.3515982  0.022267412 :
## [1576] {rolls/buns,              => {whole milk}            0.006202339  0.5083333  0.012201322 :
##         root vegetables,          => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         whole milk}               => {rolls/buns}            0.006202339  0.2675439  0.023182511 :
## [1577] {other vegetables,          => {root vegetables}        0.006202339  0.3465909  0.017895272 :
##         root vegetables,          => {whole milk}             0.005998983  0.5221239  0.011489578 :
##         whole milk}              => {other vegetables}        0.006202339  0.4880000  0.012709710 :
## [1578] {other vegetables,          => {rolls/buns}            0.006202339  0.2675439  0.023182511 :
##         rolls/buns,              => {root vegetables}          :
##         whole milk}              => {whole milk}            0.006202339  0.5083333  0.012201322 :
## [1579] {other vegetables,          => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         rolls/buns,              => {yogurt}                 0.006202339  0.3377193  0.023182511 :
##         whole milk}               => {root vegetables}        0.006202339  0.3515982  0.022267412 :
## [1580] {rolls/buns,              => {whole milk}             0.006202339  0.5083333  0.012201322 :
##         whole milk,              => {other vegetables}        0.006202339  0.4880000  0.012709710 :
##         yogurt}                  :

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##      yogurt}          => {other vegetables} 0.005998983 0.3856209 0.015556685
## [1581] {other vegetables,
##         whole milk,
##         yogurt}          => {rolls/buns}    0.005998983 0.2694064 0.022267412
## [1582] {other vegetables,
##         rolls/buns,
##         whole milk}     => {yogurt}        0.005998983 0.3352273 0.017895272
## Choose a subset
inspect(subset(association_rules, subset=lift > 2.5))

##      lhs                      rhs          support confidence coverage
## [1]  {herbs}                  => {root vegetables} 0.007015760 0.4312500 0.016268429 3.1
## [2]  {soft cheese}           => {yogurt}       0.005998983 0.3511905 0.017081851 2.1
## [3]  {grapes}                 => {tropical fruit} 0.006100661 0.2727273 0.022369090 2.1
## [4]  {ham}                    => {white bread}  0.005083884 0.1953125 0.026029487 4.0
## [5]  {white bread}           => {ham}         0.005083884 0.1207729 0.042094560 4.0
## [6]  {sliced cheese}         => {sausage}     0.007015760 0.2863071 0.024504321 3.1
## [7]  {onions}                 => {root vegetables} 0.009456024 0.3049180 0.031011693 2.1
## [8]  {berries}                => {whipped/sour cream} 0.009049314 0.2721713 0.033248602 3.1
## [9]  {whipped/sour cream}    => {berries}     0.009049314 0.1262411 0.071682766 3.1
## [10] {hygiene articles}     => {napkins}     0.006100661 0.1851852 0.032943569 3.1
## [11] {napkins}               => {hygiene articles} 0.006100661 0.1165049 0.052364006 3.1
## [12] {sugar}                 => {margarine}   0.005490595 0.1621622 0.033858668 2.1
## [13] {waffles}               => {chocolate}  0.005795628 0.1507937 0.038434164 3.1
## [14] {chocolate}             => {waffles}    0.005795628 0.1168033 0.049618709 3.1
## [15] {long life bakery product} => {chocolate}  0.005287239 0.1413043 0.037417387 2.1
## [16] {chocolate}             => {long life bakery product} 0.005287239 0.1065574 0.049618709 2.1
## [17] {dessert}               => {curd}        0.005185562 0.1397260 0.037112354 2.1
## [18] {chicken}                => {frozen vegetables} 0.006710727 0.1563981 0.042907982 3.1
## [19] {frozen vegetables}     => {chicken}    0.006710727 0.1395349 0.048093543 3.1
## [20] {beef}                   => {pork}        0.007625826 0.1453488 0.052465684 2.1
## [21] {pork}                   => {beef}        0.007625826 0.1322751 0.057651246 2.1
## [22] {beef}                   => {root vegetables} 0.017386884 0.3313953 0.052465684 3.0
## [23] {root vegetables}       => {beef}        0.017386884 0.1595149 0.108998475 3.0
## [24] {curd}                   => {whipped/sour cream} 0.010472801 0.1965649 0.053279105 2.1
## [25] {whipped/sour cream}    => {curd}        0.010472801 0.1460993 0.071682766 2.1
## [26] {butter}                 => {domestic eggs} 0.009659380 0.1743119 0.055414337 2.1
## [27] {domestic eggs}         => {butter}      0.009659380 0.1522436 0.063446873 2.1
## [28] {butter}                 => {whipped/sour cream} 0.010167768 0.1834862 0.055414337 2.1
## [29] {whipped/sour cream}    => {butter}      0.010167768 0.1418440 0.071682766 2.1
## [30] {pip fruit}              => {tropical fruit} 0.020437214 0.2701613 0.075648195 2.1
## [31] {tropical fruit}        => {pip fruit}   0.020437214 0.1947674 0.104931368 2.1
## [32] {onions,
##       root vegetables}       => {other vegetables} 0.005693950 0.6021505 0.009456024 3.1
## [33] {onions,
##       other vegetables}      => {root vegetables} 0.005693950 0.4000000 0.014234875 3.1
## [34] {other vegetables,
##       root vegetables}       => {onions}        0.005693950 0.1201717 0.047381800 3.1
## [35] {onions,
##       whole milk}             => {other vegetables} 0.006609049 0.5462185 0.012099644 2.1
## [36] {cream cheese ,
##       other vegetables}      => {yogurt}        0.005287239 0.3851852 0.013726487 2.1
## [37] {other vegetables,
##       yogurt}                => {cream cheese } 0.005287239 0.1217799 0.043416370 3.1

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## [38] {cream cheese ,  
##      whole milk}          => {yogurt}           0.006609049  0.4012346 0.016471784 2.  
## [39] {whole milk,  
##      yogurt}              => {cream cheese } 0.006609049  0.1179673 0.056024403 2.  
## [40] {chicken,  
##      root vegetables}    => {other vegetables} 0.005693950  0.5233645 0.010879512 2.  
## [41] {chicken,  
##      other vegetables}   => {root vegetables} 0.005693950  0.3181818 0.017895272 2.  
## [42] {other vegetables,  
##      root vegetables}   => {chicken}           0.005693950  0.1201717 0.047381800 2.  
## [43] {chicken,  
##      whole milk}          => {root vegetables} 0.005998983  0.3410405 0.017590239 3.  
## [44] {root vegetables,  
##      whole milk}          => {chicken}           0.005998983  0.1226611 0.048906965 2.  
## [45] {other vegetables,  
##      whole milk}          => {chicken}           0.008439248  0.1127717 0.074834774 2.  
## [46] {soda,  
##      whole milk}          => {chocolate}        0.005083884  0.1269036 0.040061007 2.  
## [47] {frozen vegetables,  
##      root vegetables}    => {other vegetables} 0.006100661  0.5263158 0.011591256 2.  
## [48] {frozen vegetables,  
##      other vegetables}   => {root vegetables} 0.006100661  0.3428571 0.017793594 3.  
## [49] {other vegetables,  
##      root vegetables}   => {frozen vegetables} 0.006100661  0.1287554 0.047381800 2.  
## [50] {frozen vegetables,  
##      whole milk}          => {root vegetables} 0.006202339  0.3034826 0.020437214 2.  
## [51] {root vegetables,  
##      whole milk}          => {frozen vegetables} 0.006202339  0.1268191 0.048906965 2.  
## [52] {other vegetables,  
##      yogurt}              => {frozen vegetables} 0.005287239  0.1217799 0.043416370 2.  
## [53] {other vegetables,  
##      whole milk}          => {frozen vegetables} 0.009659380  0.1290761 0.074834774 2.  
## [54] {beef,  
##      other vegetables}   => {root vegetables} 0.007930859  0.4020619 0.019725470 3.  
## [55] {other vegetables,  
##      root vegetables}   => {beef}               0.007930859  0.1673820 0.047381800 3.  
## [56] {beef,  
##      whole milk}          => {root vegetables} 0.008032537  0.3779904 0.021250635 3.  
## [57] {root vegetables,  
##      whole milk}          => {beef}               0.008032537  0.1642412 0.048906965 3.  
## [58] {other vegetables,  
##      rolls/buns}          => {beef}               0.005795628  0.1360382 0.042602949 2.  
## [59] {curd,  
##      whole milk}          => {whipped/sour cream} 0.005897306  0.2256809 0.026131164 3.  
## [60] {whipped/sour cream,  
##      whole milk}          => {curd}              0.005897306  0.1829653 0.032231825 3.  
## [61] {curd,  
##      tropical fruit}     => {yogurt}            0.005287239  0.5148515 0.010269446 3.  
## [62] {curd,  
##      yogurt}              => {tropical fruit} 0.005287239  0.3058824 0.017285206 2.  
## [63] {tropical fruit,  
##      yogurt}              => {curd}              0.005287239  0.1805556 0.029283172 3.  
## [64] {curd,  
##      tropical fruit}    => {other vegetables} 0.005287239  0.5148515 0.010269446 2.

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## [65]	{curd,	=> {tropical fruit}	0.005287239	0.3076923	0.017183528	2.1
## [66]	other vegetables}					
## [67]	{other vegetables,	=> {curd}	0.005287239	0.1473088	0.035892222	2.1
## [68]	tropical fruit}					
## [69]	{tropical fruit,	=> {curd}	0.006507372	0.1538462	0.042297916	2.1
## [70]	whole milk}					
## [71]	{curd,	=> {other vegetables}	0.005490595	0.5046729	0.010879512	2.1
## [72]	root vegetables}					
## [73]	{curd,	=> {root vegetables}	0.005490595	0.3195266	0.017183528	2.1
## [74]	other vegetables}					
## [75]	{curd,	=> {yogurt}	0.006100661	0.3550296	0.017183528	2.1
## [76]	other vegetables,	=> {curd}	0.006100661	0.1405152	0.043416370	2.1
## [77]	yogurt}					
## [78]	{curd,	=> {yogurt}	0.010066090	0.3852140	0.026131164	2.1
## [79]	whole milk}					
## [80]	{whole milk,	=> {curd}	0.010066090	0.1796733	0.056024403	3.1
## [81]	yogurt}					
## [82]	{pork,	=> {other vegetables}	0.007015760	0.5149254	0.013624809	2.0
## [83]	root vegetables}					
## [84]	{pork,	=> {root vegetables}	0.007015760	0.3239437	0.021657346	2.0
## [85]	whole milk}					
## [86]	{pork,	=> {pork}	0.007015760	0.1480687	0.047381800	2.0
## [87]	rolls/buns}					
## [88]	{bottled beer,	=> {root vegetables}	0.006812405	0.3073394	0.022165735	2.0
## [89]	soda}					
## [90]	{bottled beer,	=> {bottled water}	0.005083884	0.2994012	0.016980173	2.0
## [91]	whole milk}					
## [92]	{margarine,	=> {bottled water}	0.006100661	0.2985075	0.020437214	2.0
## [93]	whole milk}					
## [94]	{margarine,	=> {domestic eggs}	0.005185562	0.2142857	0.024199288	3.0
## [95]	root vegetables}					
## [96]	{margarine,	=> {margarine}	0.005185562	0.1728814	0.029994916	2.0
## [97]	other vegetables}					
## [98]	{butter,	=> {other vegetables}	0.005897306	0.5321101	0.011082867	2.0
## [99]	whole milk}					
## [100]	{butter,	=> {root vegetables}	0.005897306	0.2989691	0.019725470	2.0
## [101]	whole milk}					
## [102]	{butter,	=> {domestic eggs}	0.005998983	0.2177122	0.027554652	3.0
## [103]	whipped/sour cream}					
## [104]	{butter,	=> {butter}	0.005998983	0.2000000	0.029994916	3.0
## [105]	other vegetables}					
## [106]	{butter,	=> {other vegetables}	0.005795628	0.5700000	0.010167768	2.0
## [107]	whipped/sour cream}					
## [108]	{butter,	=> {whipped/sour cream}	0.005795628	0.2893401	0.020030503	4.0
## [109]	other vegetables,					
## [110]	whipped/sour cream}	=> {butter}	0.005795628	0.2007042	0.028876462	3.0
## [111]	{butter,	=> {whole milk}	0.006710727	0.6600000	0.010167768	2.0
## [112]	whipped/sour cream}					
## [113]	{butter,	=> {whole milk}	0.006710727	0.2435424	0.027554652	3.0

```

## [92] {whipped/sour cream,
##       whole milk}          => {butter}           0.006710727 0.2082019 0.032231825 3.1
## [93] {citrus fruit,
##       whole milk}          => {butter}           0.005083884 0.1666667 0.030503305 3.0
## [94] {bottled water,
##       whole milk}          => {butter}           0.005388917 0.1568047 0.034367056 2.9
## [95] {butter,
##       tropical fruit}      => {other vegetables} 0.005490595 0.5510204 0.009964413 2.8
## [96] {butter,
##       other vegetables}    => {tropical fruit}   0.005490595 0.2741117 0.020030503 2.7
## [97] {other vegetables,
##       tropical fruit}      => {butter}           0.005490595 0.1529745 0.035892222 2.7
## [98] {tropical fruit,
##       whole milk}          => {butter}           0.006202339 0.1466346 0.042297916 2.6
## [99] {butter,
##       root vegetables}     => {other vegetables} 0.006609049 0.5118110 0.012913066 2.6
## [100] {butter,
##        other vegetables}   => {root vegetables} 0.006609049 0.3299492 0.020030503 3.0
## [101] {other vegetables,
##        root vegetables}   => {butter}           0.006609049 0.1394850 0.047381800 2.5
## [102] {butter,
##       whole milk}          => {root vegetables} 0.008235892 0.2988930 0.027554652 2.5
## [103] {root vegetables,
##       whole milk}          => {butter}           0.008235892 0.1683992 0.048906965 3.0
## [104] {other vegetables,
##       yogurt}              => {butter}           0.006405694 0.1475410 0.043416370 2.5
## [105] {butter,
##       yogurt}              => {whole milk}        0.009354347 0.6388889 0.014641586 2.5
## [106] {whole milk,
##       yogurt}              => {butter}           0.009354347 0.1669691 0.056024403 3.0
## [107] {other vegetables,
##       whole milk}          => {butter}           0.011489578 0.1535326 0.074834774 2.7
## [108] {newspapers,
##       root vegetables}    => {other vegetables} 0.005998983 0.5221239 0.011489578 2.7
## [109] {newspapers,
##       other vegetables}   => {root vegetables} 0.005998983 0.3105263 0.019318760 2.8
## [110] {domestic eggs,
##       whipped/sour cream}  => {butter}           0.005083884 0.5102041 0.009964413 2.8
## [111] {domestic eggs,
##       other vegetables}   => {whipped/sour cream} 0.005083884 0.2283105 0.022267412 3.0
## [112] {other vegetables,
##       whipped/sour cream}  => {domestic eggs}     0.005083884 0.1760563 0.028876462 2.7
## [113] {domestic eggs,
##       whole milk}          => {whipped/sour cream} 0.005693950 0.1898305 0.029994916 2.7
## [114] {whipped/sour cream,
##       whole milk}          => {domestic eggs}     0.005693950 0.1766562 0.032231825 2.7
## [115] {pip fruit,
##       whole milk}          => {domestic eggs}     0.005388917 0.1790541 0.030096594 2.8
## [116] {citrus fruit,
##       whole milk}          => {domestic eggs}     0.005693950 0.1866667 0.030503305 2.9
## [117] {tropical fruit,
##       whole milk}          => {domestic eggs}     0.006914082 0.1634615 0.042297916 2.8
## [118] {domestic eggs,
##       root vegetables}    => {other vegetables} 0.007320793 0.5106383 0.014336553 2.8

```

## [119] {domestic eggs, ## other vegetables}	=> {root vegetables}	0.007320793	0.3287671	0.022267412	3.0
## [120] {domestic eggs, ## whole milk}	=> {root vegetables}	0.008540925	0.2847458	0.029994916	2.0
## [121] {root vegetables, ## whole milk}	=> {domestic eggs}	0.008540925	0.1746362	0.048906965	2.0
## [122] {other vegetables, ## whole milk}	=> {domestic eggs}	0.012302999	0.1644022	0.074834774	2.0
## [123] {fruit/vegetable juice, ## soda}	=> {bottled water}	0.005185562	0.2817680	0.018403660	2.0
## [124] {fruit/vegetable juice, ## other vegetables}	=> {tropical fruit}	0.006609049	0.3140097	0.021047280	2.0
## [125] {other vegetables, ## tropical fruit}	=> {fruit/vegetable juice}	0.006609049	0.1841360	0.035892222	2.0
## [126] {fruit/vegetable juice, ## root vegetables}	=> {other vegetables}	0.006609049	0.5508475	0.011997966	2.0
## [127] {fruit/vegetable juice, ## other vegetables}	=> {root vegetables}	0.006609049	0.3140097	0.021047280	2.0
## [128] {soda, ## yogurt}	=> {fruit/vegetable juice}	0.005083884	0.1858736	0.027351296	2.0
## [129] {fruit/vegetable juice, ## other vegetables}	=> {yogurt}	0.008235892	0.3913043	0.021047280	2.0
## [130] {other vegetables, ## yogurt}	=> {fruit/vegetable juice}	0.008235892	0.1896956	0.043416370	2.0
## [131] {fruit/vegetable juice, ## whole milk}	=> {yogurt}	0.009456024	0.3549618	0.026639553	2.0
## [132] {pip fruit, ## whipped/sour cream}	=> {other vegetables}	0.005592272	0.6043956	0.009252669	3.0
## [133] {other vegetables, ## whipped/sour cream}	=> {pip fruit}	0.005592272	0.1936620	0.028876462	2.0
## [134] {other vegetables, ## pip fruit}	=> {whipped/sour cream}	0.005592272	0.2140078	0.026131164	2.0
## [135] {pip fruit, ## whipped/sour cream}	=> {whole milk}	0.005998983	0.6483516	0.009252669	2.0
## [136] {pip fruit, ## whole milk}	=> {whipped/sour cream}	0.005998983	0.1993243	0.030096594	2.0
## [137] {citrus fruit, ## whipped/sour cream}	=> {other vegetables}	0.005693950	0.5233645	0.010879512	2.0
## [138] {citrus fruit, ## other vegetables}	=> {whipped/sour cream}	0.005693950	0.1971831	0.028876462	2.0
## [139] {citrus fruit, ## whole milk}	=> {whipped/sour cream}	0.006304016	0.2066667	0.030503305	2.0
## [140] {tropical fruit, ## whipped/sour cream}	=> {yogurt}	0.006202339	0.4485294	0.013828165	3.0
## [141] {whipped/sour cream, ## yogurt}	=> {tropical fruit}	0.006202339	0.2990196	0.020742247	2.0
## [142] {tropical fruit, ## yogurt}	=> {whipped/sour cream}	0.006202339	0.2118056	0.029283172	2.0
## [143] {tropical fruit, ## whipped/sour cream}	=> {other vegetables}	0.007829181	0.5661765	0.013828165	2.0
## [144] {other vegetables, ## whipped/sour cream}	=> {tropical fruit}	0.007829181	0.2711268	0.028876462	2.0
## [145] {other vegetables, ## tropical fruit}	=> {whipped/sour cream}	0.007829181	0.2181303	0.035892222	2.0

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## [146] {tropical fruit,
##        whole milk}          => {whipped/sour cream}    0.007930859  0.1875000 0.042297916 2.0
## [147] {root vegetables,
##        whipped/sour cream}  => {yogurt}                 0.006405694  0.3750000 0.017081851 2.0
## [148] {whipped/sour cream,
##        yogurt}              => {root vegetables}      0.006405694  0.3088235 0.020742247 2.0
## [149] {root vegetables,
##        yogurt}              => {whipped/sour cream}    0.006405694  0.2480315 0.025826131 3.0
## [150] {root vegetables,
##        whipped/sour cream}  => {other vegetables}     0.008540925  0.5000000 0.017081851 2.0
## [151] {other vegetables,
##        whipped/sour cream}  => {root vegetables}      0.008540925  0.2957746 0.028876462 2.0
## [152] {other vegetables,
##        root vegetables}     => {whipped/sour cream}    0.008540925  0.1802575 0.047381800 2.0
## [153] {whipped/sour cream,
##        whole milk}           => {root vegetables}      0.009456024  0.2933754 0.032231825 2.0
## [154] {root vegetables,
##        whole milk}           => {whipped/sour cream}    0.009456024  0.1933472 0.048906965 2.0
## [155] {whipped/sour cream,
##        yogurt}               => {other vegetables}     0.010167768  0.4901961 0.020742247 2.0
## [156] {other vegetables,
##        whipped/sour cream}  => {yogurt}                 0.010167768  0.3521127 0.028876462 2.0
## [157] {other vegetables,
##        yogurt}               => {whipped/sour cream}    0.010167768  0.2341920 0.043416370 3.0
## [158] {whole milk,
##        yogurt}               => {whipped/sour cream}    0.010879512  0.1941924 0.056024403 2.0
## [159] {other vegetables,
##        whole milk}            => {whipped/sour cream}    0.014641586  0.1956522 0.074834774 2.0
## [160] {citrus fruit,
##        pip fruit}             => {tropical fruit}       0.005592272  0.4044118 0.013828165 3.0
## [161] {pip fruit,
##        tropical fruit}       => {citrus fruit}         0.005592272  0.2736318 0.020437214 3.0
## [162] {citrus fruit,
##        tropical fruit}       => {pip fruit}            0.005592272  0.2806122 0.019928826 3.0
## [163] {other vegetables,
##        pip fruit}              => {citrus fruit}         0.005897306  0.2256809 0.026131164 2.0
## [164] {citrus fruit,
##        other vegetables}     => {pip fruit}            0.005897306  0.2042254 0.028876462 2.0
## [165] {pip fruit,
##        root vegetables}      => {tropical fruit}       0.005287239  0.3398693 0.015556685 3.0
## [166] {root vegetables,
##        tropical fruit}       => {pip fruit}            0.005287239  0.2512077 0.021047280 3.0
## [167] {pip fruit,
##        yogurt}                => {tropical fruit}       0.006405694  0.3559322 0.017996950 3.0
## [168] {tropical fruit,
##        yogurt}                => {pip fruit}            0.006405694  0.2187500 0.029283172 2.0
## [169] {other vegetables,
##        pip fruit}              => {tropical fruit}       0.009456024  0.3618677 0.026131164 3.0
## [170] {other vegetables,
##        tropical fruit}       => {pip fruit}            0.009456024  0.2634561 0.035892222 3.0
## [171] {pip fruit,
##        whole milk}             => {tropical fruit}       0.008439248  0.2804054 0.030096594 2.0
## [172] {tropical fruit,
##        whole milk}             => {pip fruit}            0.008439248  0.1995192 0.042297916 2.0

```

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## [173] {pip fruit,
##        yogurt}          => {root vegetables}      0.005287239  0.2937853  0.017996950 2.0
## [174] {root vegetables,
##        yogurt}          => {pip fruit}           0.005287239  0.2047244  0.025826131 2.0
## [175] {pip fruit,
##        root vegetables} => {other vegetables}    0.008134215  0.5228758  0.015556685 2.0
## [176] {other vegetables,
##        pip fruit}         => {root vegetables}      0.008134215  0.3112840  0.026131164 2.0
## [177] {pip fruit,
##        whole milk}        => {root vegetables}      0.008947636  0.2972973  0.030096594 2.0
## [178] {pastry,
##        root vegetables}   => {other vegetables}    0.005897306  0.5370370  0.010981190 2.0
## [179] {citrus fruit,
##        tropical fruit}    => {root vegetables}      0.005693950  0.2857143  0.019928826 2.0
## [180] {citrus fruit,
##        root vegetables}   => {tropical fruit}       0.005693950  0.3218391  0.017691917 3.0
## [181] {root vegetables,
##        tropical fruit}    => {citrus fruit}          0.005693950  0.2705314  0.021047280 3.0
## [182] {citrus fruit,
##        yogurt}            => {tropical fruit}       0.006304016  0.2910798  0.021657346 2.0
## [183] {tropical fruit,
##        yogurt}            => {citrus fruit}          0.006304016  0.2152778  0.029283172 2.0
## [184] {citrus fruit,
##        other vegetables}  => {tropical fruit}       0.009049314  0.3133803  0.028876462 2.0
## [185] {other vegetables,
##        tropical fruit}    => {citrus fruit}          0.009049314  0.2521246  0.035892222 3.0
## [186] {citrus fruit,
##        whole milk}         => {tropical fruit}       0.009049314  0.2966667  0.030503305 2.0
## [187] {tropical fruit,
##        whole milk}         => {citrus fruit}          0.009049314  0.2139423  0.042297916 2.0
## [188] {citrus fruit,
##        root vegetables}   => {other vegetables}    0.010371124  0.5862069  0.017691917 3.0
## [189] {citrus fruit,
##        other vegetables}  => {root vegetables}      0.010371124  0.3591549  0.028876462 3.0
## [190] {other vegetables,
##        root vegetables}   => {citrus fruit}          0.010371124  0.2188841  0.047381800 2.0
## [191] {citrus fruit,
##        whole milk}         => {root vegetables}      0.009150991  0.3000000  0.030503305 2.0
## [192] {rolls/buns,
##        shopping bags}     => {sausage}             0.005998983  0.3072917  0.019522115 3.0
## [193] {root vegetables,
##        shopping bags}     => {other vegetables}    0.006609049  0.5158730  0.012811388 2.0
## [194] {other vegetables,
##        shopping bags}     => {root vegetables}      0.006609049  0.2850877  0.023182511 2.0
## [195] {rolls/buns,
##        soda}               => {sausage}             0.009659380  0.2519894  0.038332486 2.0
## [196] {bottled water,
##        tropical fruit}    => {yogurt}              0.007117438  0.3846154  0.018505338 2.0
## [197] {bottled water,
##        yogurt}             => {tropical fruit}       0.007117438  0.3097345  0.022979156 2.0
## [198] {bottled water,
##        other vegetables}  => {root vegetables}      0.007015760  0.2827869  0.024809354 2.0
## [199] {root vegetables,
##        tropical fruit}    => {yogurt}              0.008134215  0.3864734  0.021047280 2.0

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## [200] {tropical fruit,
##         yogurt}                => {root vegetables}      0.008134215  0.2777778 0.029283172 2.1
## [201] {root vegetables,
##         yogurt}                => {tropical fruit}      0.008134215  0.3149606 0.025826131 3.0
## [202] {root vegetables,
##         tropical fruit}        => {other vegetables}    0.012302999  0.5845411 0.021047280 3.0
## [203] {other vegetables,
##         tropical fruit}        => {root vegetables}      0.012302999  0.3427762 0.035892222 3.0
## [204] {tropical fruit,
##         whole milk}             => {root vegetables}      0.011997966  0.2836538 0.042297916 2.1
## [205] {rolls/buns,
##         tropical fruit}        => {yogurt}                 0.008744281  0.3553719 0.024605999 2.1
## [206] {other vegetables,
##         yogurt}                => {tropical fruit}      0.012302999  0.2833724 0.043416370 2.1
## [207] {tropical fruit,
##         whole milk}             => {yogurt}                 0.015149975  0.3581731 0.042297916 2.1
## [208] {whole milk,
##         yogurt}                => {tropical fruit}      0.015149975  0.2704174 0.056024403 2.1
## [209] {root vegetables,
##         yogurt}                => {other vegetables}    0.012913066  0.5000000 0.025826131 2.1
## [210] {other vegetables,
##         yogurt}                => {root vegetables}      0.012913066  0.2974239 0.043416370 2.1
## [211] {rolls/buns,
##         root vegetables}       => {other vegetables}    0.012201322  0.5020921 0.024300966 2.1
## [212] {other vegetables,
##         rolls/buns}            => {root vegetables}      0.012201322  0.2863962 0.042602949 2.1
## [213] {other vegetables,
##         whole milk}            => {root vegetables}      0.023182511  0.3097826 0.074834774 2.1
## [214] {fruit/vegetable juice,
##         whole milk,
##         yogurt}                => {other vegetables}    0.005083884  0.5376344 0.009456024 2.1
## [215] {fruit/vegetable juice,
##         other vegetables,
##         whole milk}            => {yogurt}                 0.005083884  0.4854369 0.010472801 3.0
## [216] {other vegetables,
##         whole milk,
##         yogurt}                => {fruit/vegetable juice} 0.005083884  0.2283105 0.022267412 3.0
## [217] {root vegetables,
##         whipped/sour cream,
##         whole milk}            => {other vegetables}    0.005185562  0.5483871 0.009456024 2.1
## [218] {other vegetables,
##         whipped/sour cream,
##         whole milk}            => {root vegetables}      0.005185562  0.3541667 0.014641586 3.0
## [219] {other vegetables,
##         root vegetables,
##         whole milk}            => {whipped/sour cream}   0.005185562  0.2236842 0.023182511 3.0
## [220] {whipped/sour cream,
##         whole milk,
##         yogurt}                => {other vegetables}    0.005592272  0.5140187 0.010879512 2.1
## [221] {other vegetables,
##         whipped/sour cream,
##         whole milk}            => {yogurt}                 0.005592272  0.3819444 0.014641586 2.1
## [222] {other vegetables,
##         whole milk,

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##      yogurt}          => {whipped/sour cream}    0.005592272  0.2511416  0.022267412 3.1
## [223] {other vegetables,      => {whole milk}        0.005490595  0.6750000  0.008134215 2.0
##      pip fruit,
##      root vegetables}
## [224] {pip fruit,          => {other vegetables}  0.005490595  0.6136364  0.008947636 3.1
##      root vegetables,
##      whole milk}
## [225] {other vegetables,      => {root vegetables}  0.005490595  0.4060150  0.013523132 3.1
##      pip fruit,
##      whole milk}
## [226] {other vegetables,      => {pip fruit}        0.005490595  0.2368421  0.023182511 3.1
##      root vegetables,
##      whole milk}
## [227] {pip fruit,          => {other vegetables}  0.005083884  0.5319149  0.009557702 2.1
##      whole milk,
##      yogurt}
## [228] {other vegetables,      => {yogurt}           0.005083884  0.3759398  0.013523132 2.0
##      pip fruit,
##      whole milk}
## [229] {other vegetables,      => {pip fruit}        0.005083884  0.2283105  0.022267412 3.1
##      whole milk,
##      yogurt}
## [230] {citrus fruit,          => {other vegetables}  0.005795628  0.6333333  0.009150991 3.1
##      root vegetables,
##      whole milk}
## [231] {citrus fruit,          => {root vegetables}  0.005795628  0.4453125  0.013014743 4.0
##      other vegetables,
##      whole milk}
## [232] {other vegetables,      => {citrus fruit}       0.005795628  0.2500000  0.023182511 3.0
##      root vegetables,
##      whole milk}
## [233] {root vegetables,          => {whole milk}        0.005693950  0.7000000  0.008134215 2.1
##      tropical fruit,
##      yogurt}
## [234] {root vegetables,          => {yogurt}            0.005693950  0.4745763  0.011997966 3.1
##      tropical fruit,
##      whole milk}
## [235] {tropical fruit,          => {root vegetables}  0.005693950  0.3758389  0.015149975 3.0
##      whole milk,
##      yogurt}
## [236] {root vegetables,          => {tropical fruit}   0.005693950  0.3916084  0.014539908 3.1
##      whole milk,
##      yogurt}
## [237] {root vegetables,          => {other vegetables} 0.007015760  0.5847458  0.011997966 3.0
##      tropical fruit,
##      whole milk}
## [238] {other vegetables,          => {root vegetables}  0.007015760  0.4107143  0.017081851 3.1
##      tropical fruit,
##      whole milk}
## [239] {other vegetables,          => {tropical fruit}   0.007015760  0.3026316  0.023182511 2.0
##      root vegetables,
##      whole milk}
## [240] {tropical fruit,          => {whole milk}        0.007015760  0.2511416  0.022267412 3.1
##      whole milk,

```

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##      yogurt}          => {other vegetables}      0.007625826  0.5033557  0.015149975 2.0
## [241] {other vegetables,
##         tropical fruit,
##         whole milk}          => {yogurt}          0.007625826  0.4464286  0.017081851 3.1
## [242] {other vegetables,
##         whole milk,
##         yogurt}              => {tropical fruit}    0.007625826  0.3424658  0.022267412 3.1
## [243] {root vegetables,
##         whole milk,
##         yogurt}              => {other vegetables} 0.007829181  0.5384615  0.014539908 2.1
## [244] {other vegetables,
##         whole milk,
##         yogurt}              => {root vegetables} 0.007829181  0.3515982  0.022267412 3.1
## [245] {rolls/buns,
##         root vegetables,
##         whole milk}          => {other vegetables} 0.006202339  0.4880000  0.012709710 2.0
## [246] {other vegetables,
##         rolls/buns,
##         whole milk}          => {root vegetables} 0.006202339  0.3465909  0.017895272 3.1
inspect(subset(association_rules, subset=confidence > 0.620))

##      lhs                      rhs          support confidence coverage lift count
## [1] {curd,
##       tropical fruit}          => {whole milk}   0.006507372  0.6336634  0.010269446 2.479936  64
## [2] {domestic eggs,
##       margarine}              => {whole milk}   0.005185562  0.6219512  0.008337570 2.434099  51
## [3] {butter,
##       domestic eggs}          => {whole milk}   0.005998983  0.6210526  0.009659380 2.430582  59
## [4] {butter,
##       whipped/sour cream}     => {whole milk}   0.006710727  0.6600000  0.010167768 2.583008  66
## [5] {butter,
##       tropical fruit}         => {whole milk}   0.006202339  0.6224490  0.009964413 2.436047  61
## [6] {butter,
##       root vegetables}        => {whole milk}   0.008235892  0.6377953  0.012913066 2.496107  81
## [7] {butter,
##       yogurt}                 => {whole milk}   0.009354347  0.6388889  0.014641586 2.500387  92
## [8] {domestic eggs,
##       pip fruit}              => {whole milk}   0.005388917  0.6235294  0.008642603 2.440275  53
## [9] {pip fruit,
##       whipped/sour cream}     => {whole milk}   0.005998983  0.6483516  0.009252669 2.537421  59
## [10] {other vegetables,
##        pip fruit,
##        root vegetables}        => {whole milk}   0.005490595  0.6750000  0.008134215 2.641713  54
## [11] {other vegetables,
##        pip fruit,
##        yogurt}                => {whole milk}   0.005083884  0.6250000  0.008134215 2.446031  50
## [12] {citrus fruit,
##        root vegetables,
##        whole milk}             => {other vegetables} 0.005795628  0.6333333  0.009150991 3.273165  57
## [13] {root vegetables,
##        tropical fruit,
##        yogurt}                => {whole milk}   0.005693950  0.7000000  0.008134215 2.739554  56

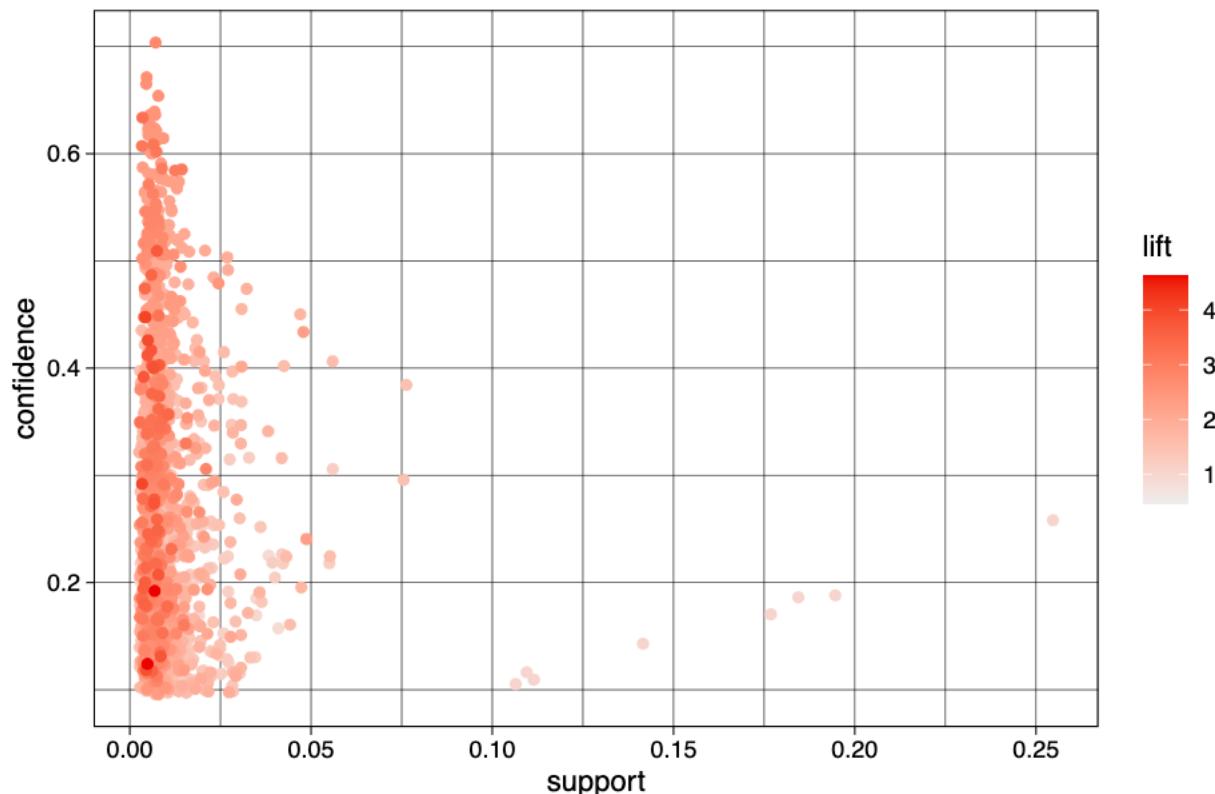
```

```
inspect(subset(association_rules, subset=lift > 15 & confidence > 0.620))
```

```
# plot all the rules in (support, confidence) space  
# notice that high lift rules tend to have low support  
plot(association_rules)
```

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

Scatter plot for 1582 rules

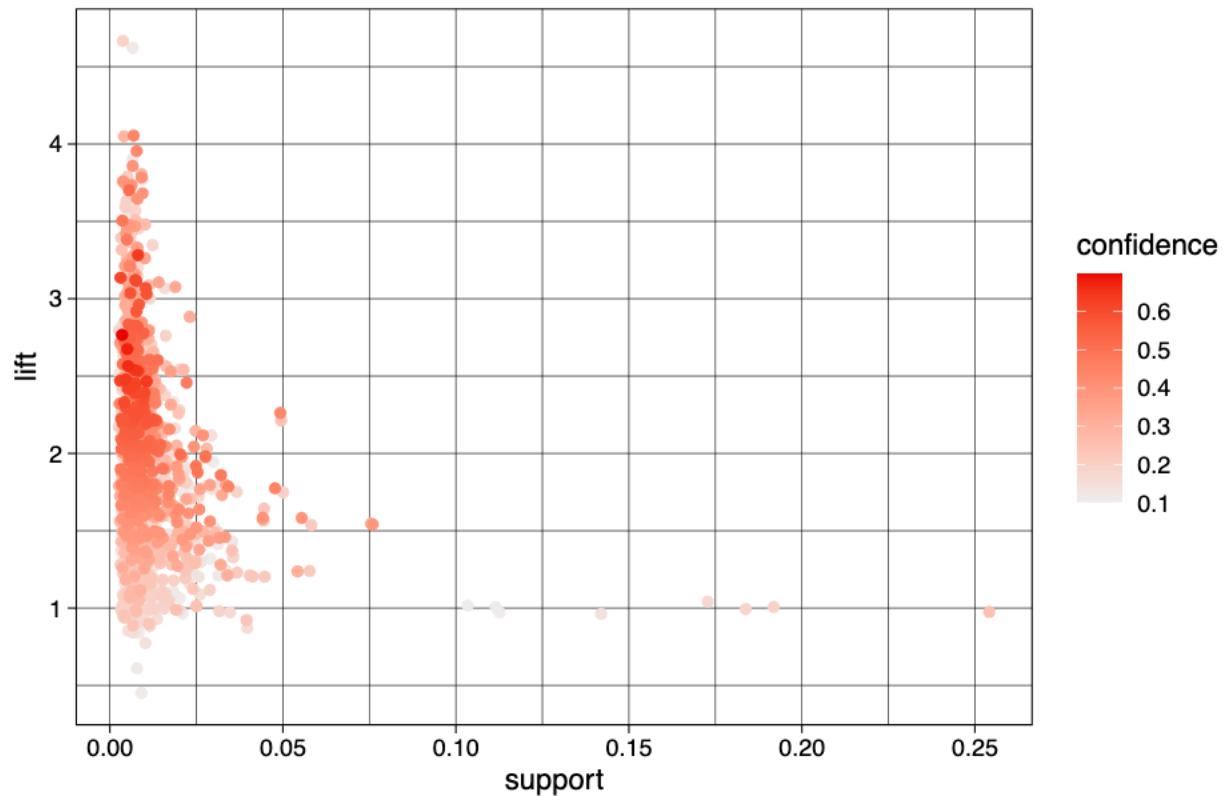


```
# can swap the axes and color scales
```

```
plot(association_rules, measure = c("support", "lift"), shading = "confidence")
```

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

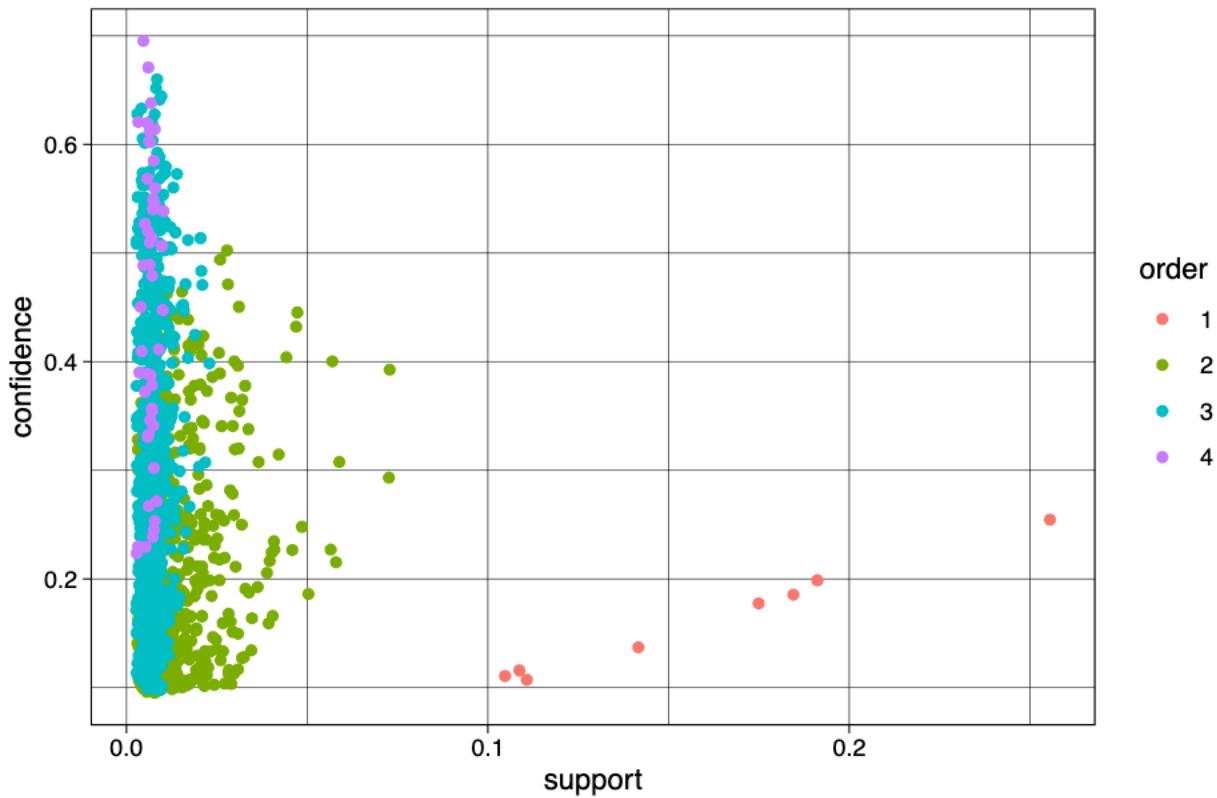
Scatter plot for 1582 rules



```
# "two key" plot: coloring is by size (order) of item set
plot(association_rules, method='two-key plot')

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

Scatter plot for 1582 rules



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

##	lhs	rhs	support	confidence	coverage
## [1]	{}	=> {bottled water}	0.11052364	0.1105236	1.0000000
## [2]	{}	=> {tropical fruit}	0.10493137	0.1049314	1.0000000
## [3]	{}	=> {root vegetables}	0.10899847	0.1089985	1.0000000
## [4]	{}	=> {soda}	0.17437722	0.1743772	1.0000000
## [5]	{}	=> {yogurt}	0.13950178	0.1395018	1.0000000
## [6]	{}	=> {rolls/buns}	0.18393493	0.1839349	1.0000000
## [7]	{}	=> {other vegetables}	0.19349263	0.1934926	1.0000000
## [8]	{}	=> {whole milk}	0.25551601	0.2555160	1.0000000
## [9]	{tropical fruit}	=> {other vegetables}	0.03589222	0.3420543	0.1049314
## [10]	{other vegetables}	=> {tropical fruit}	0.03589222	0.1854966	0.1934926
## [11]	{tropical fruit}	=> {whole milk}	0.04229792	0.4031008	0.1049314
## [12]	{whole milk}	=> {tropical fruit}	0.04229792	0.1655392	0.2555160
## [13]	{root vegetables}	=> {other vegetables}	0.04738180	0.4347015	0.1089985
## [14]	{other vegetables}	=> {root vegetables}	0.04738180	0.2448765	0.1934926
## [15]	{root vegetables}	=> {whole milk}	0.04890696	0.4486940	0.1089985
## [16]	{whole milk}	=> {root vegetables}	0.04890696	0.1914047	0.2555160
## [17]	{soda}	=> {rolls/buns}	0.03833249	0.2198251	0.1743772
## [18]	{rolls/buns}	=> {soda}	0.03833249	0.2084024	0.1839349
## [19]	{soda}	=> {whole milk}	0.04006101	0.2297376	0.1743772
## [20]	{whole milk}	=> {soda}	0.04006101	0.1567847	0.2555160
## [21]	{yogurt}	=> {other vegetables}	0.04341637	0.3112245	0.1395018
## [22]	{other vegetables}	=> {yogurt}	0.04341637	0.2243826	0.1934926
## [23]	{yogurt}	=> {whole milk}	0.05602440	0.4016035	0.1395018

```

## [24] {whole milk}      => {yogurt}          0.05602440 0.2192598 0.2555160
## [25] {rolls/buns}     => {other vegetables} 0.04260295 0.2316197 0.1839349
## [26] {other vegetables} => {rolls/buns}     0.04260295 0.2201787 0.1934926
## [27] {rolls/buns}     => {whole milk}        0.05663447 0.3079049 0.1839349
## [28] {whole milk}      => {rolls/buns}     0.05663447 0.2216474 0.2555160
## [29] {other vegetables} => {whole milk}       0.07483477 0.3867578 0.1934926
## [30] {whole milk}      => {other vegetables} 0.07483477 0.2928770 0.2555160
##           lift   count
## [1] 1.0000000 1087
## [2] 1.0000000 1032
## [3] 1.0000000 1072
## [4] 1.0000000 1715
## [5] 1.0000000 1372
## [6] 1.0000000 1809
## [7] 1.0000000 1903
## [8] 1.0000000 2513
## [9] 1.7677896 353
## [10] 1.7677896 353
## [11] 1.5775950 416
## [12] 1.5775950 416
## [13] 2.2466049 466
## [14] 2.2466049 466
## [15] 1.7560310 481
## [16] 1.7560310 481
## [17] 1.1951242 377
## [18] 1.1951242 377
## [19] 0.8991124 394
## [20] 0.8991124 394
## [21] 1.6084566 427
## [22] 1.6084566 427
## [23] 1.5717351 551
## [24] 1.5717351 551
## [25] 1.1970465 419
## [26] 1.1970465 419
## [27] 1.2050318 557
## [28] 1.2050318 557
## [29] 1.5136341 736
## [30] 1.5136341 736

inspect(subset(association_rules, confidence > 0.620))

##      lhs            rhs      support confidence coverage    lift count
## [1] {curd,
##       tropical fruit} => {whole milk} 0.006507372 0.6336634 0.010269446 2.479936 64
## [2] {domestic eggs,
##       margarine}      => {whole milk} 0.005185562 0.6219512 0.008337570 2.434099 51
## [3] {butter,
##       domestic eggs}  => {whole milk} 0.005998983 0.6210526 0.009659380 2.430582 59
## [4] {butter,
##       whipped/sour cream} => {whole milk} 0.006710727 0.6600000 0.010167768 2.583008 66
## [5] {butter,
##       tropical fruit}  => {whole milk} 0.006202339 0.6224490 0.009964413 2.436047 61
## [6] {butter,
##       root vegetables} => {whole milk} 0.008235892 0.6377953 0.012913066 2.496107 81
## [7] {butter,

```

```

##      yogurt}          => {whole milk}    0.009354347  0.6388889 0.014641586 2.500387  92
## [8] {domestic eggs,          => {whole milk}    0.005388917  0.6235294 0.008642603 2.440275  53
##      pip fruit}          => {whole milk}    0.005998983  0.6483516 0.009252669 2.537421  59
## [9] {pip fruit,          => {whole milk}    0.005490595  0.6750000 0.008134215 2.641713  54
##      whipped/sour cream} => {whole milk}    0.005083884  0.6250000 0.008134215 2.446031  50
## [10] {other vegetables,          => {whole milk}    0.005795628  0.6333333 0.009150991 3.273165  57
##      pip fruit,          => {whole milk}    0.005693950  0.7000000 0.008134215 2.739554  56
## [11] {other vegetables,          => {whole milk}    0.005490595  0.6750000 0.008134215 2.641713  54
##      pip fruit,          => {whole milk}    0.005083884  0.6250000 0.008134215 2.446031  50
## [12] {citrus fruit,          => {other vegetables} 0.005795628  0.6333333 0.009150991 3.273165  57
##      root vegetables,          => {other vegetables} 0.005693950  0.7000000 0.008134215 2.739554  56
## [13] {root vegetables,          => {whole milk}    0.005490595  0.6750000 0.008134215 2.641713  54
##      tropical fruit,          => {whole milk}    0.005083884  0.6250000 0.008134215 2.446031  50
##      yogurt}          => {whole milk}    0.005693950  0.7000000 0.008134215 2.739554  56

inspect(subset(association_rules, lift > 25))

## WORKS WITH GEPHI
# # graph-based visualization
# # export
# # associations are represented as edges
# # For rules, each item in the LHS is connected
# # with a directed edge to the item in the RHS.
# playlists_graph = associations2igraph(subset(association_rules, lift>4), associationsAsNodes = FALSE)
# igraph::write_graph(playlists_graph, file='groceries.graphml', format = "graphml")

```

To determine the threshold, I looked at various lift and confidence plots, and utilized the plot below that shows association rules by lift and confidence. I tested various lift and confidence values to see if they would have an affect on the plots. For the most part, the plots remained similar, however, when using a very small lift value, the plot was unrecognizable, and did not include many data points. I used a confidence value of 0.620 in order to increase the threshold value. I also did not want to increase the threshold too much and have too few rules. I used a lift threshold of 15.

The discovered item sets include a lot of whole milk and vegetables. This makes sense because milk and vegetables are part of the two main food groups that we should be eating daily, so it is expected that a lot of baskets will contain these items.

```

library(arules)
library(ggplot2)

# Load and prepare data
groceries_raw = readLines("/Users/teamccormack/Downloads/groceries.txt")
basket_items = strsplit(groceries_raw, ',')
basket_object = as(basket_items, 'transactions')

# Generate association rules
association_rules = apriori(data = basket_object,
                             parameter = list(support = 0.005,
                                               confidence = 0.1))

## 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
##          10  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].
# Subset rules based on various thresholds
rules_lift_5 <- subset(association_rules, lift > 5)
rules_lift_10 <- subset(association_rules, lift > 10)
rules_confidence_0.6 <- subset(association_rules, confidence > 0.6)
rules_confidence_0.8 <- subset(association_rules, confidence > 0.8)

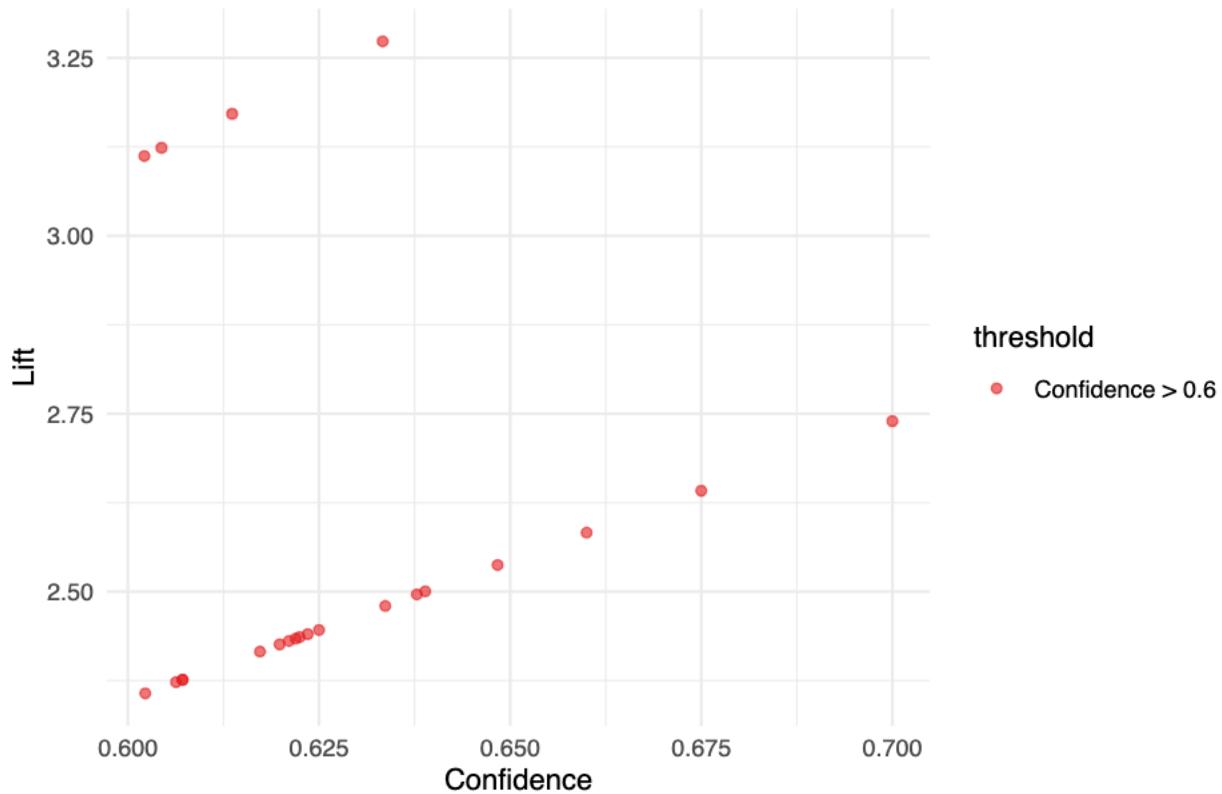
# Create a data frame for plotting
rules_df <- data.frame(
  lift = c(
    quality(rules_lift_5)$lift,
    quality(rules_lift_10)$lift,
    quality(rules_confidence_0.6)$lift,
    quality(rules_confidence_0.8)$lift
  ),
  confidence = c(
    quality(rules_lift_5)$confidence,
    quality(rules_lift_10)$confidence,
    quality(rules_confidence_0.6)$confidence,
    quality(rules_confidence_0.8)$confidence
  ),
  threshold = factor(c(
    rep("Lift > 5", length(quality(rules_lift_5)$lift)),
    rep("Lift > 10", length(quality(rules_lift_10)$lift)),
    rep("Confidence > 0.6", length(quality(rules_confidence_0.6)$lift)),
    rep("Confidence > 0.8", length(quality(rules_confidence_0.8)$lift))
  )))
)

# Plotting the rules based on lift and confidence thresholds
ggplot(rules_df, aes(x = confidence, y = lift, color = threshold)) +
  geom_point(alpha = 0.6) +
  labs(title = "Association Rules by Lift and Confidence",
       x = "Confidence",
       y = "Lift") +

```

```
theme_minimal() +  
scale_color_brewer(palette = "Set1")
```

Association Rules by Lift and Confidence



The code in this section was used to plot various lift and confidence values and their accompanying threshold. By using this I decided to use a confidence value of 0.620. This is an increase from my original confidence value.