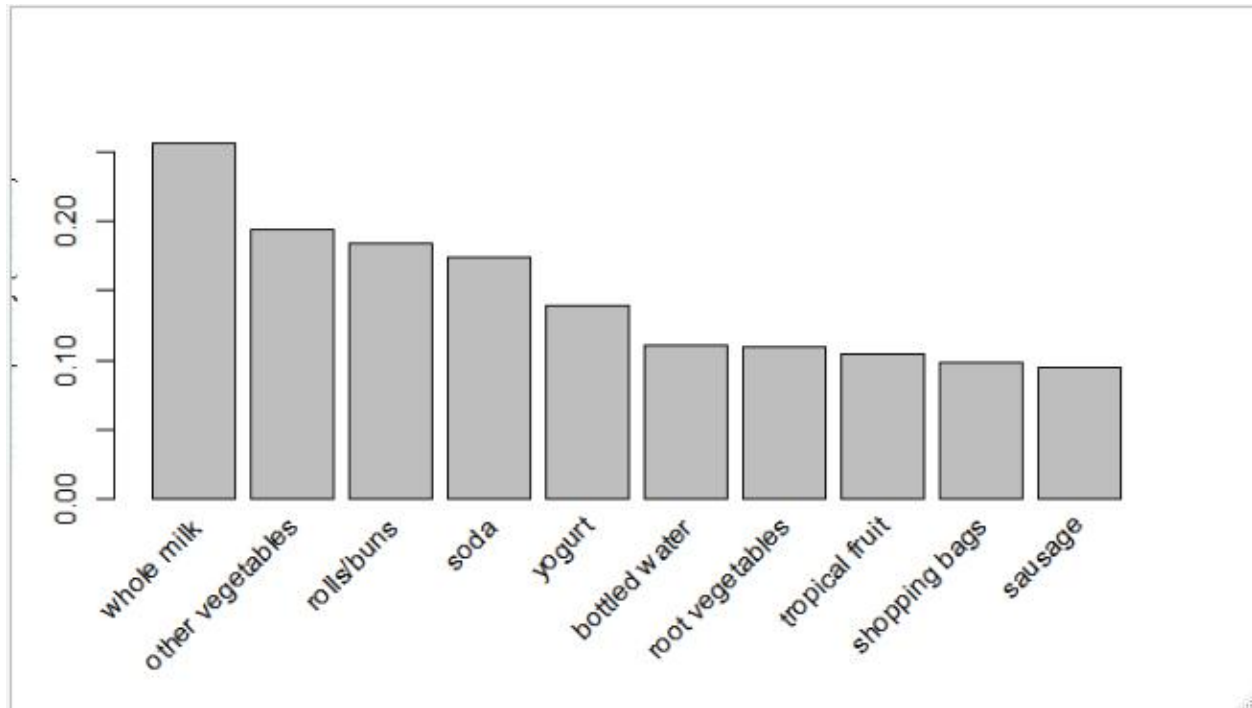


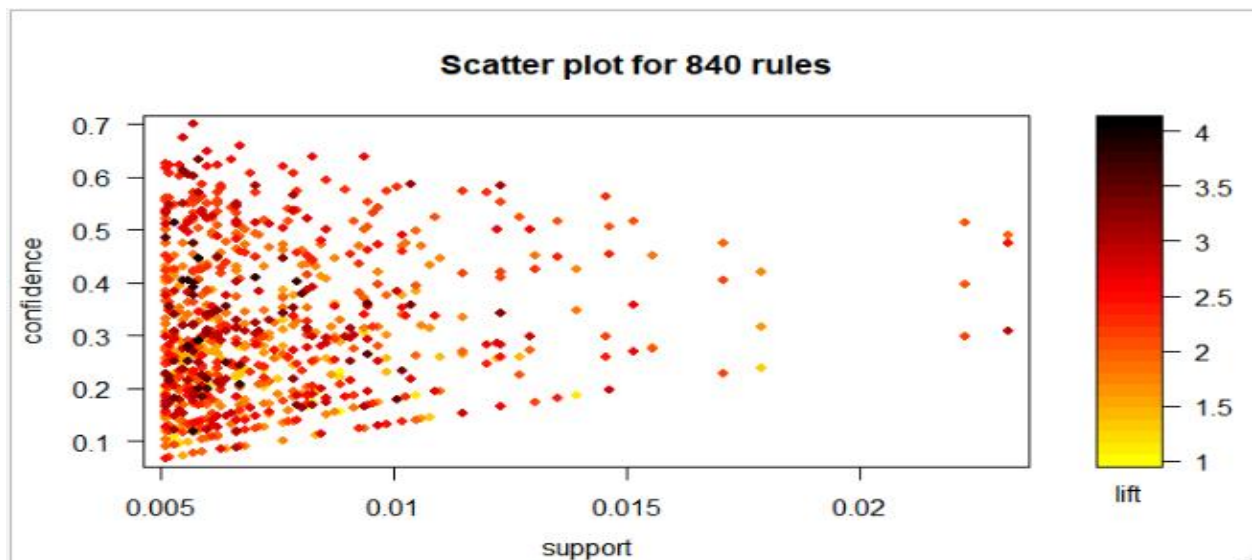
Association Rules

Example-Groceries Dataset



Above plot shows the item buying frequency.

Based on Apriori algorithm with support 0.005 and confidence 0.05 and minimum length as 3 we are getting 840 rules.



```
> inspect(head(sort(Grules, by = "lift")))
```

t	lhs	rhs	support	confidence	lift	count
[1]	{citrus fruit, other vegetables, whole milk}	=> {root vegetables}	0.005795628	0.4453125	4.085493	57
[2]	{butter, other vegetables}	=> {whipped/sour cream}	0.005795628	0.2893401	4.036397	57
[3]	{other vegetables, root vegetables}	=> {onions}	0.005693950	0.1201717	3.875044	56
[4]	{citrus fruit, pip fruit}	=> {tropical fruit}	0.005592272	0.4044118	3.854060	55
[5]	{other vegetables, tropical fruit, whole milk}	=> {root vegetables}	0.007015760	0.4107143	3.768074	69
[6]	{whipped/sour cream, whole milk}	=> {butter}	0.006710727	0.2082019	3.757185	66

```
> inspect(head(sort(Grules, by = "confidence")))
```

e	lhs	rhs	support	confidence
[1]	{root vegetables,tropical fruit,yogurt}	=> {whole milk}	0.005693950	0.7000000
[2]	{other vegetables,pip fruit,root vegetables}	=> {whole milk}	0.005490595	0.6750000
[3]	{butter,whipped/sour cream}	=> {whole milk}	0.006710727	0.6600000
[4]	{pip fruit,whipped/sour cream}	=> {whole milk}	0.005998983	0.6483516
[5]	{butter,yogurt}	=> {whole milk}	0.009354347	0.6388889
[6]	{butter,root vegetables}	=> {whole milk}	0.008235892	0.6377953

lift	count
[1]	2.739554 56
[2]	2.641713 54
[3]	2.583008 66
[4]	2.537421 59
[5]	2.500387 92
[6]	2.496107 81

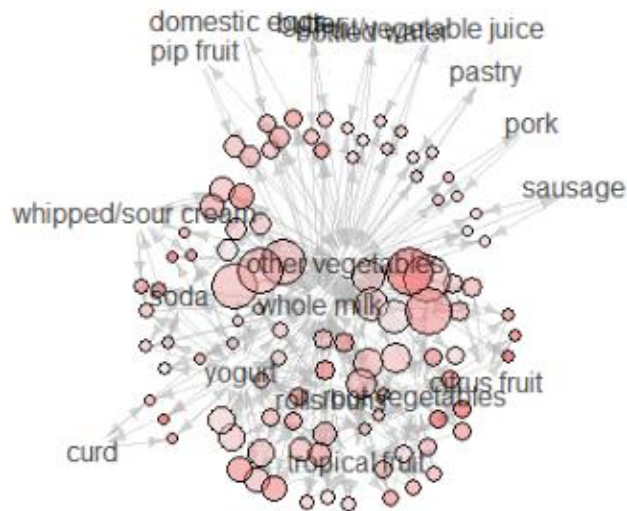
```
> inspect(head(sort(Grules, by = "support")))
```

	lhs	rhs	support	confidence
[1]	{other vegetables,root vegetables}	=> {whole milk}	0.02318251	0.4892704
[2]	{root vegetables,whole milk}	=> {other vegetables}	0.02318251	0.4740125
[3]	{other vegetables,whole milk}	=> {root vegetables}	0.02318251	0.3097826
[4]	{other vegetables,yogurt}	=> {whole milk}	0.02226741	0.5128806
[5]	{whole milk,yogurt}	=> {other vegetables}	0.02226741	0.3974592
[6]	{other vegetables,whole milk}	=> {yogurt}	0.02226741	0.2975543

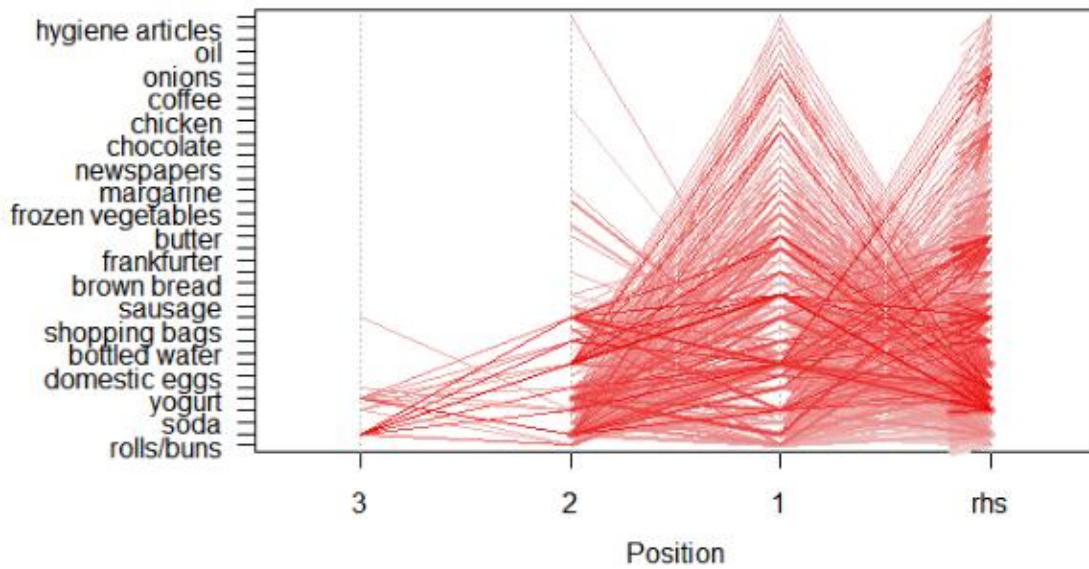
lift	count
[1]	1.914833 228
[2]	2.449770 228
[3]	2.842082 228
[4]	2.007235 219
[5]	2.054131 219
[6]	2.132979 219

Graph for 100 rules

size: support (0.01 - 0.023)
color: lift (1.067 - 3.372)



Parallel coordinates plot for 840 rules



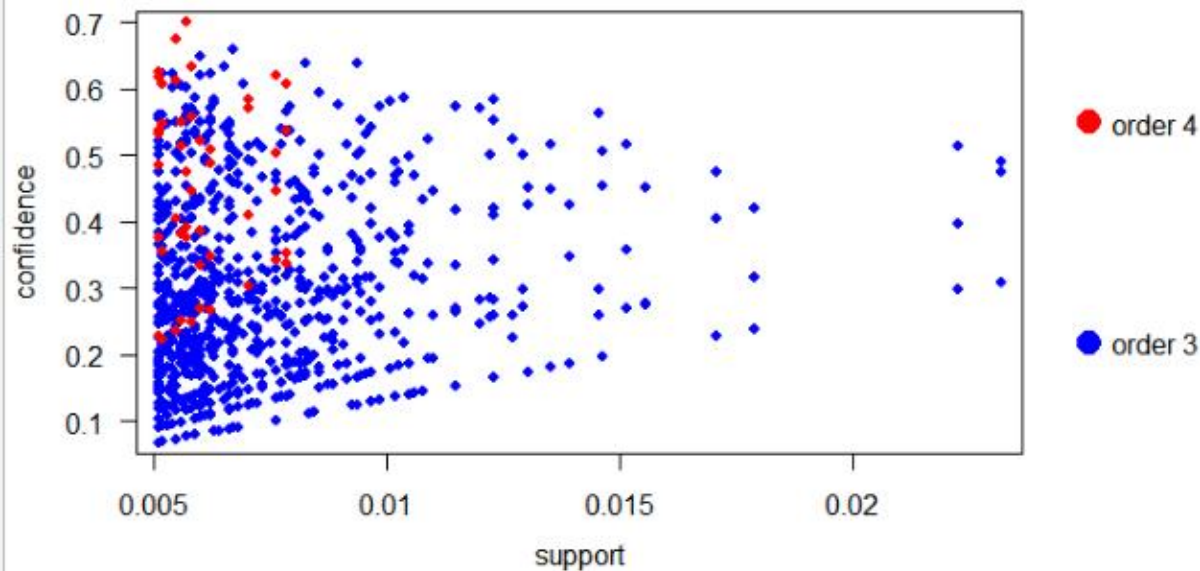
Items in LHS Group

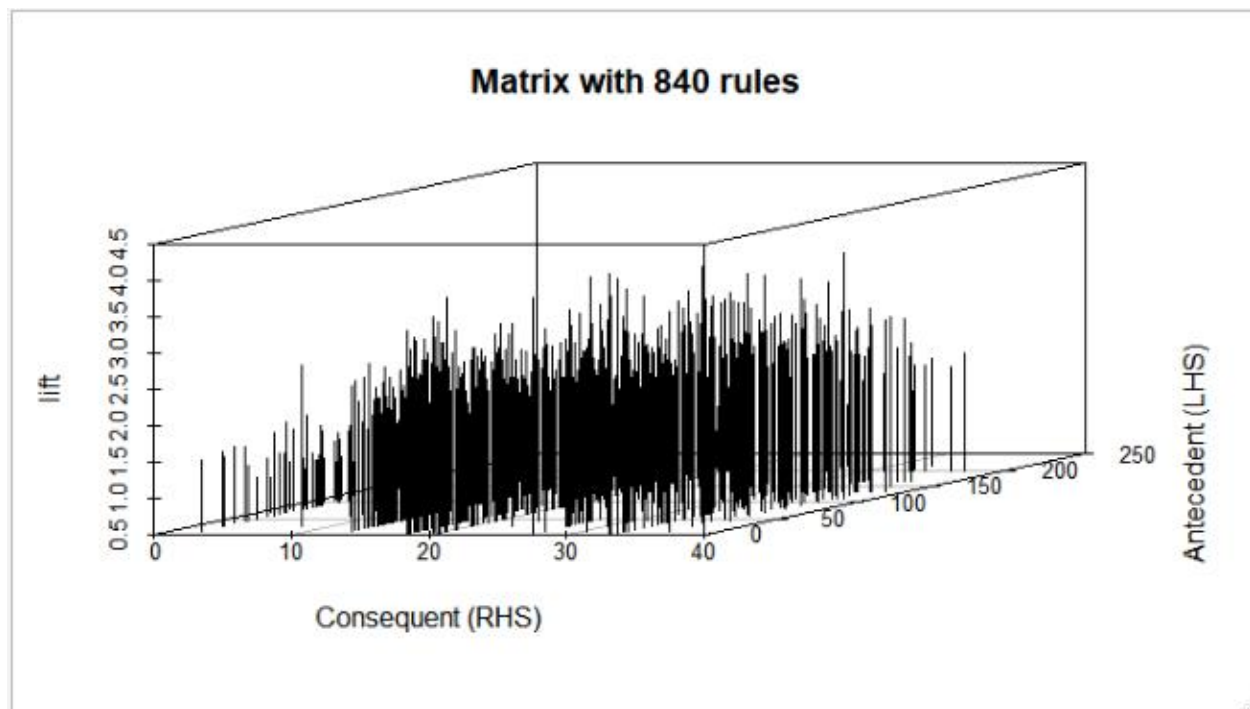
27 rules: {tropical fruit, curd, +5 items}
 42 rules: {whipped/sour cream, domestic eggs, +3 items}
 36 rules: {sausage, citrus fruit, +4 items}
 44 rules: {butter, pip fruit, +4 items}
 28 rules: {citrus fruit, pip fruit, +6 items}
 90 rules: {tropical fruit, yogurt, +2 items}
 37 rules: {onions, pork, +13 items}
 30 rules: {pastry, curd, +4 items}
 21 rules: {chicken, frozen vegetables, +6 items}
 59 rules: {other vegetables, root vegetables, +1 items}
 18 rules: {yogurt, pip fruit, +2 items}
 28 rules: {soda, margarine, +2 items}
 24 rules: {bottled water, soda, +2 items}
 83 rules: {beef, pork, +22 items}
 20 rules: {onions, hamburger meat, +17 items}
 46 rules: {cream cheese, napkins, +14 items}
 88 rules: {rolls/buns, root vegetables, +2 items}
 36 rules: {brown bread, frankfurter, +6 items}
 43 rules: {shopping bags, chocolate, +8 items}
 60 rules: {napkins, brown bread, +30 items}

Size: support
 Color: lift

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Two-key plot





inspect(yogurtrules[1:5])

	lhs	rhs	support	confidence	lift
[1]	{cream cheese,yogurt}	=> {other vegetables}	0.005287239	0.4262295	2.202820
[2]	{cream cheese,other vegetables}	=> {yogurt}	0.005287239	0.3851852	2.761149
[3]	{other vegetables,yogurt}	=> {cream cheese}	0.005287239	0.1217799	3.071038
[4]	{cream cheese,yogurt}	=> {whole milk}	0.006609049	0.5327869	2.085141
[5]	{cream cheese,whole milk}	=> {yogurt}	0.006609049	0.4012346	2.876197

	count
[1]	52
[2]	52
[3]	52
[4]	65
[5]	65

People likely to buy Yogurt also likely to buy whole milk and other vegetables as well.