

# RFM analysis for an Electronics webshop

## Brief RFM description

Recency-Frequency-Monetary distribution analysis

- Recency - Nr of days since last order
- Frequency - Nr of sales
- Monetary - Average value of sales

The analysis is done based on browserid. K-means algorithm is used for clustering.

## Distribution of browserids based on frequency, recency and monetary values

### Recency

#### Standard scales

```
##  mean  sd min max IQR median  total
## 1   181 116   1 438 181   152 212618

##   0%  25%  50%  75% 100%
##   1   88  152  269  438

##  percent  count  range range_count  value
## 1         0   259         0         259     1
## 2        25 53309    0-25        53050    88
## 3        50 106408  25-50        53099   152
## 4        75 159848  50-75        53440   269
## 5       100 212618  75-100        52770   438
```

#### Observed scales

In case of Recency no need of observed scales

```
##  percent  count  range range_count  value
## 1     0.0   259         0         259     1
## 2    25.0 53309    0-25        53050    88
## 3    50.0 106408  25-50        53099   152
## 4    70.0 149194  50-70        42786   246
## 5    90.0 191739  70-90        42545   366
## 6    95.0 202429  90-95        10690   395
## 7    99.0 210522  95-99         8093   416
## 8    99.9 212453 99-99.9         1931   435
## 9   100.0 212618 99.9-100         165   438
```

### Frequency

#### Standard scales

```
##  mean sd min max IQR median  total
```

```
## 1      2  2      1 236      1      1 212618
##      0%  25%  50%  75% 100%
##      1      1      1      2  236

##      percent      count      range range_count      value
## 1           0 149177           0      149177           1
## 2          25 149177      0-25           0           1
## 3          50 149177     25-50           0           1
## 4          75 186764     50-75      37587           2
## 5         100 212618     75-100     25854          236
```

#### Observed scales

```
##      percent      count      range range_count      value
## 1          0.0 149177           0      149177      1.000
## 2          90.0 199983      0-90      50806      3.000
## 3          99.0 210720     90-99      10737      7.000
## 4          99.9 212405     99-99.9      1685     18.383
## 5         100.0 212618     99.9-100      213     236.000
```

### Monetary

#### Standard scales

```
##      mean      sd min      max IQR median      total
## 1 1681 33770      0 12501064 1627      724 212618

##          0%      25%      50%      75%      100%
##          0      245      724      1872 12501064

##      percent      count      range range_count      value
## 1           0 17919           0      17919           0
## 2          25 53183      0-25      35264          245
## 3          50 106351     25-50      53168           724
## 4          75 159483     50-75      53132          1872
## 5         100 212618     75-100     53135 12501064
```

#### Observed scales

```
##      Min.  1st Qu.  Median      Mean  3rd Qu.      Max.
##          0      245      724      1681      1872 12501064

##          0%      25%      50%      75%      100%
##          0      245      724      1872 12501064

##      percent      count      range range_count      value
## 1          0.0 17919           0      17919           0.00
## 2         25.0 53183      0-25      35264          245.00
## 3         50.0 106351     25-50      53168          724.00
## 4         75.0 159483     50-75      53132         1872.00
## 5         90.0 191366     75-90      31883         3898.00
## 6         99.0 210491     90-99      19125        10439.32
## 7         99.9 212405     99-99.9      1914        22638.38
## 8        100.0 212618     99.9-100      213        12501064.00
```

## Quarterly changes in distribution of customers on recency, frequency and monetary

### Profile(browserid) categories

Recency categories are:

recent (recency\_1): NrOfDaysSinceLastOrder < 123 (70 % of sales are less than that value)

some\_time\_ago (recency\_2): NrOfDaysSinceLastOrder >= 123 and NrOfDaysSinceLastOrder < 233

long\_time\_ago (recency\_3): NrOfDaysSinceLastOrder >= 233

Frequency categories are:

one\_time\_buyer (frequency\_1): NrOfSales = 1 (70 % of sales are less than that value)

frequent\_buyer (frequency\_2): NrOfSales > 1

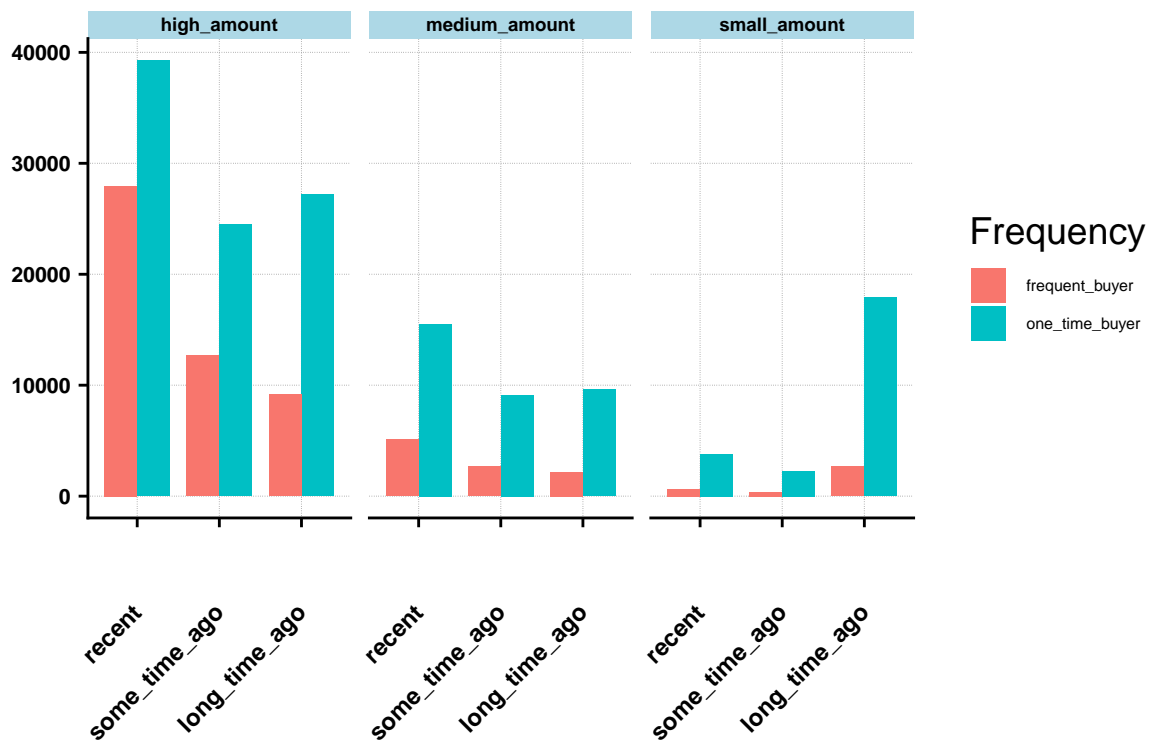
Monetary categories are:

small\_amount\_spent (monetary\_1): AOV (Average Value of Sales) < 85 (25 % of sales are less than that value)

medium\_amount\_spent (monetary\_2): AOV >= 85 and AOV <= 737 (90% of the sales < 600)

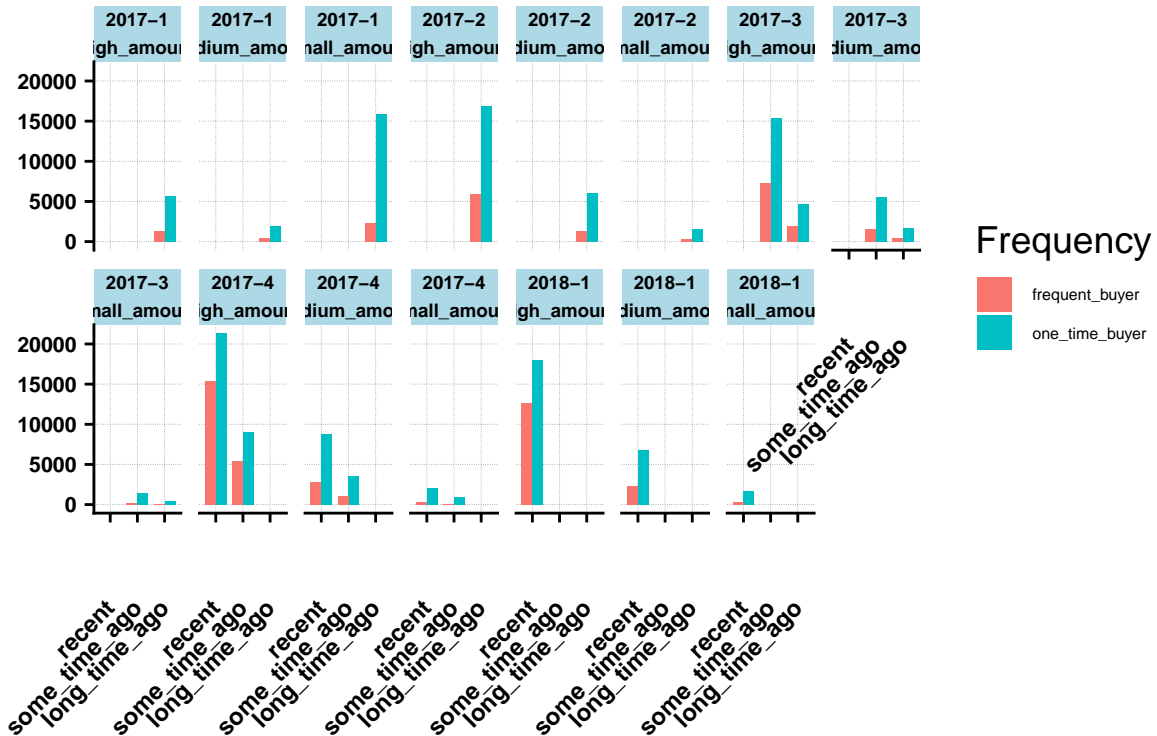
high\_amount\_spent (monetary\_3): AOV > 737

### Distribution of customers on monetary, recency and frequency



Quarterly changes in distribution of customers on recency, frequency and monetary

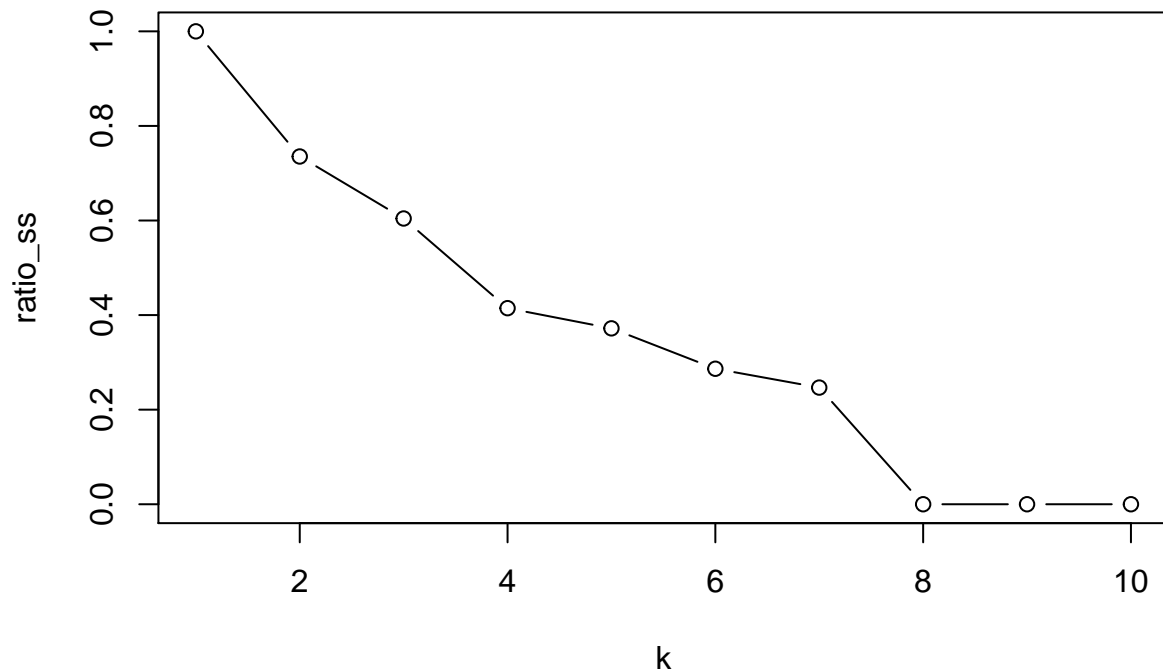
## Distribution of customers on monetary, recency and frequency



## Distribution of customers on recency, frequency cluster and monetary

Firstly, a cluster comprised of recency and frequency was done using a clustering algorithm. Then a distribution on monetary values and this cluster is done.

##	cluster	segment	size	value	recency	frequency
## 1	6	Hibernating	16354	141	0.93317814	-0.05025941
## 2	2	Customers needing attention	1686	254	0.51197970	2.64708861
## 3	1	Potential Loyalist	25	365	0.22996362	23.85454421
## 4	5	Loyal customers	12947	433	-0.06524579	-0.14096694
## 5	4	Recent Customers	10544	522	-1.44905387	-0.22869339
## 6	3	Champions	4	616	-1.64522450	-0.24263769
##	monetary	r_rank	f_rank	m_rank		
## 1	-0.052112110	1	4	1		
## 2	0.230615798	2	5	4		
## 3	0.408713137	3	6	5		
## 4	0.015774641	4	3	3		
## 5	-0.006397579	5	2	2		
## 6	79.106794655	6	1	6		



### ## Customer segments

Champions :: Bought recently, buy often and spend the most!

Loyal Customers :: Spend good money with us often. Responsive to promotions.

Potential Loyalist :: Recent customers, but spent a good amount and bought more than once.

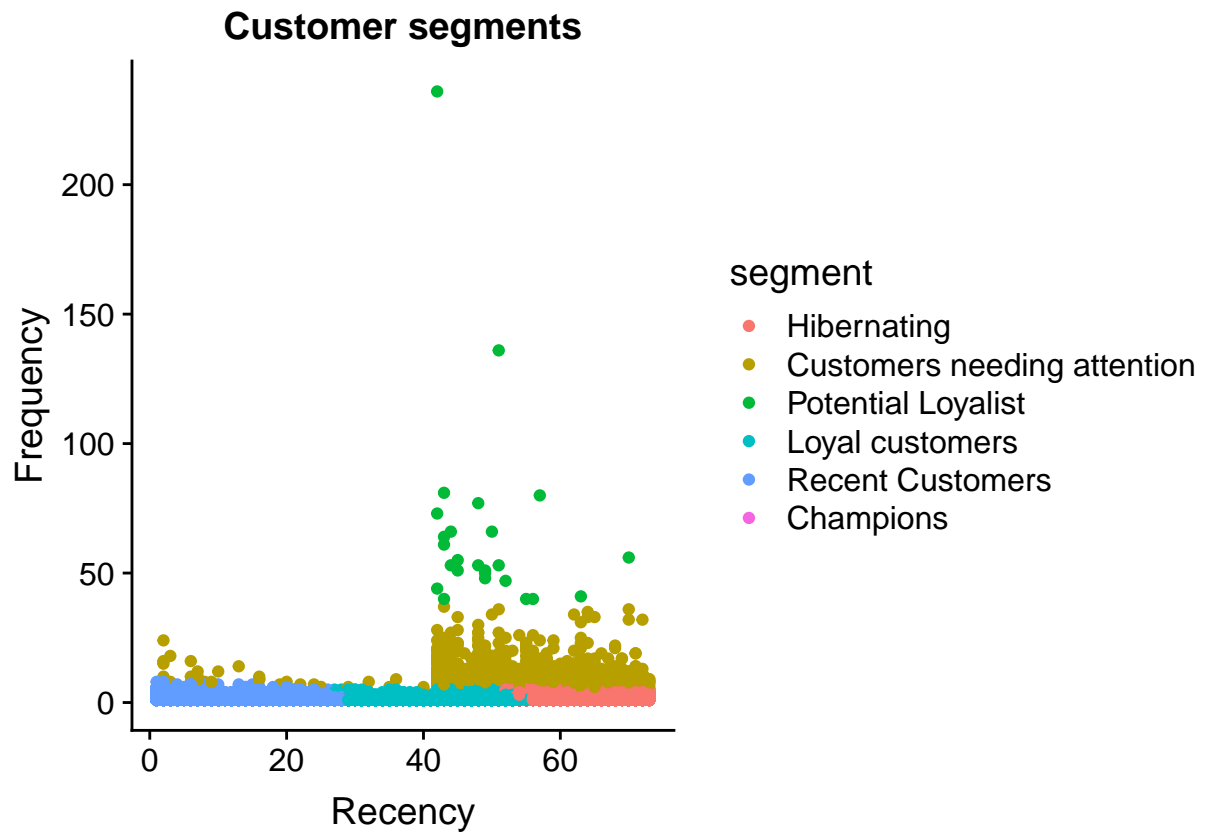
Recent Customers :: Bought most recently, but not often.

Promising :: Recent shoppers, but haven't spent much.

Customers Needing Attention :: Above average recency, frequency and monetary values. May not have bought very recently though.

Hibernating :: Last purchase was long back, low spenders and low number of orders.

segment	size
Hibernating	16354
Customers needing attention	1686
Potential Loyalist	25
Loyal customers	12947
Recent Customers	10544
Champions	4



## Customer segments on monetary values

