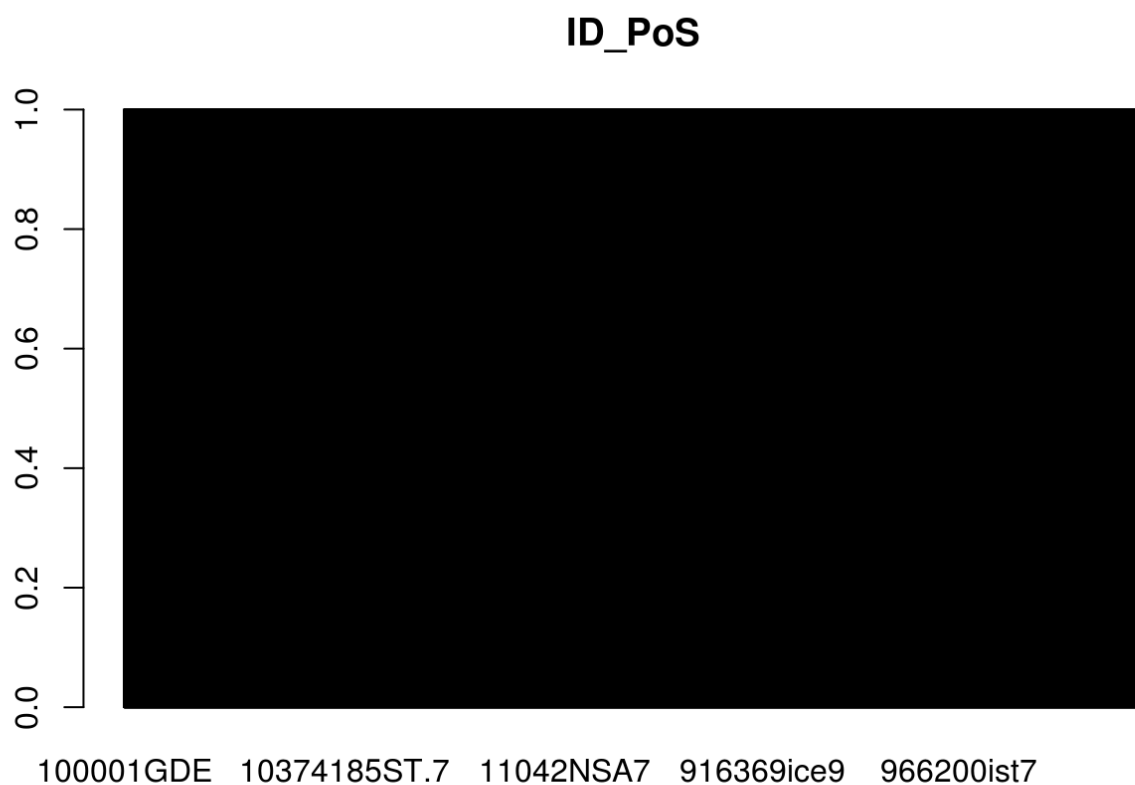


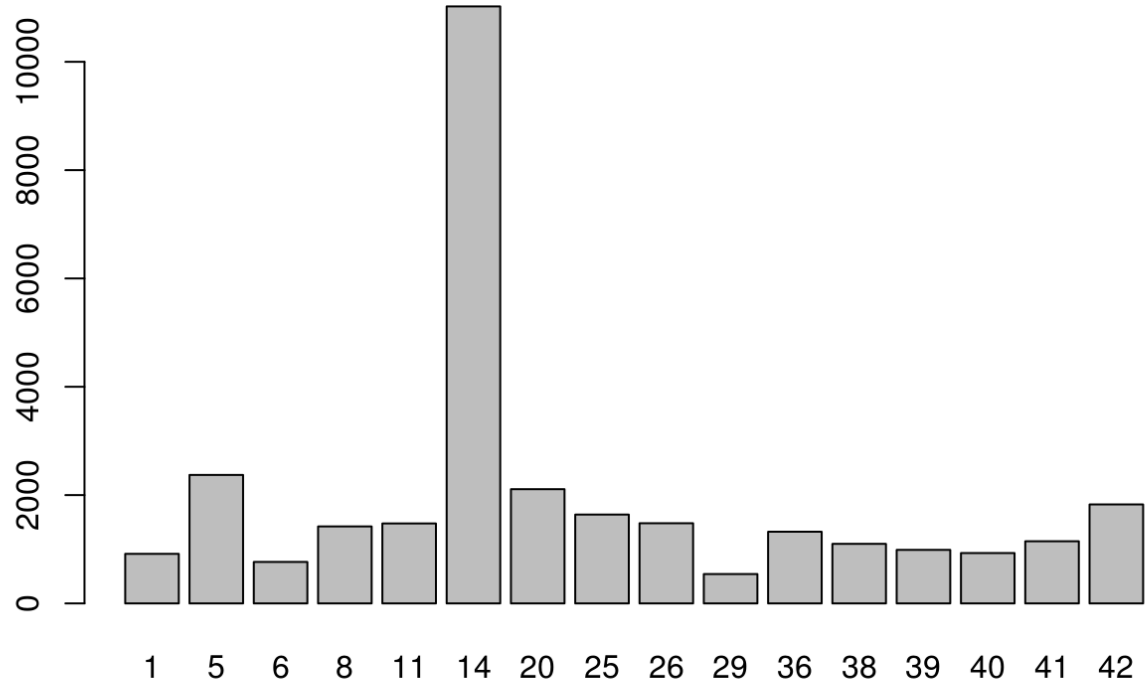
Anexo 1: Análise Exploratória dos Dados



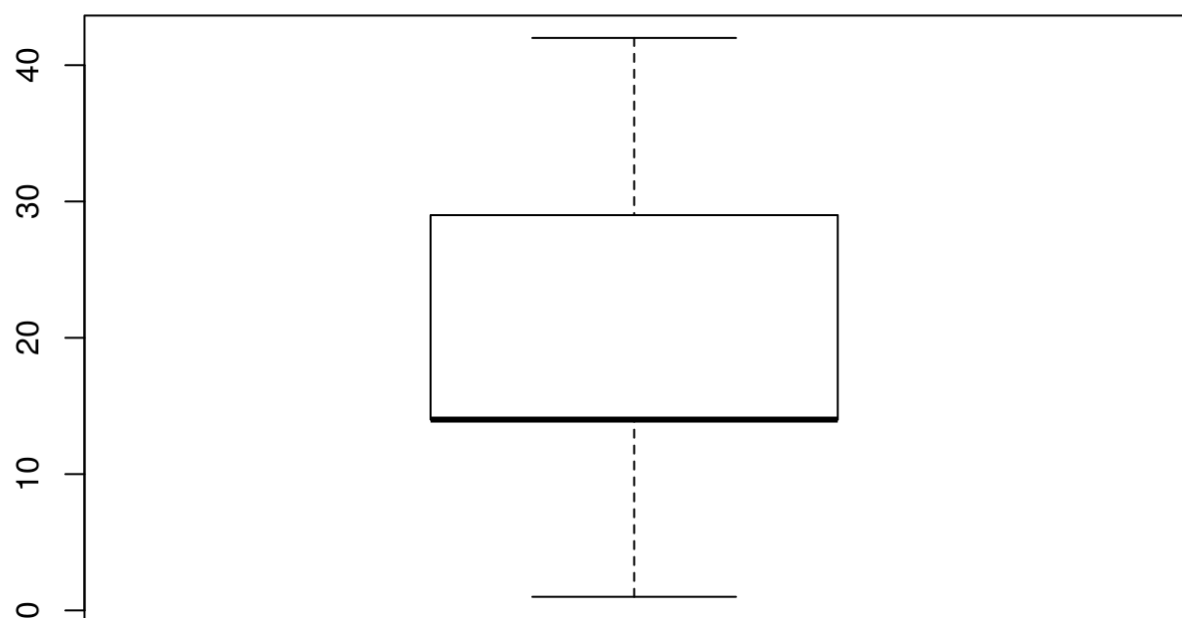
```
$ID_PoS  
[1] "factor"
```

```
Observations : 31057  
Unique values : 31057  
Missing values : 0 0 %  
Zero values : 0 0 %
```

ID_Distributor



ID_Distributor



\$ID_Distributor

[1] "integer"

Min : 1
Max : 42
Range : 1 42
Sum : 625552
Median : 14
Mean : 20.14206
Variance : 150.8902
Skewness : 0.5689737
Kurtosis : 2.036837

Observations : 31057
Unique values : 16
Missing values : 0 0 %
Zero values : 0 0 %
Neg. values : 0 0 %

1Q : 1
2Q : 14
3Q : 14
4Q : 29
5Q : 42

OUTLIERS at SD = 1.5 :

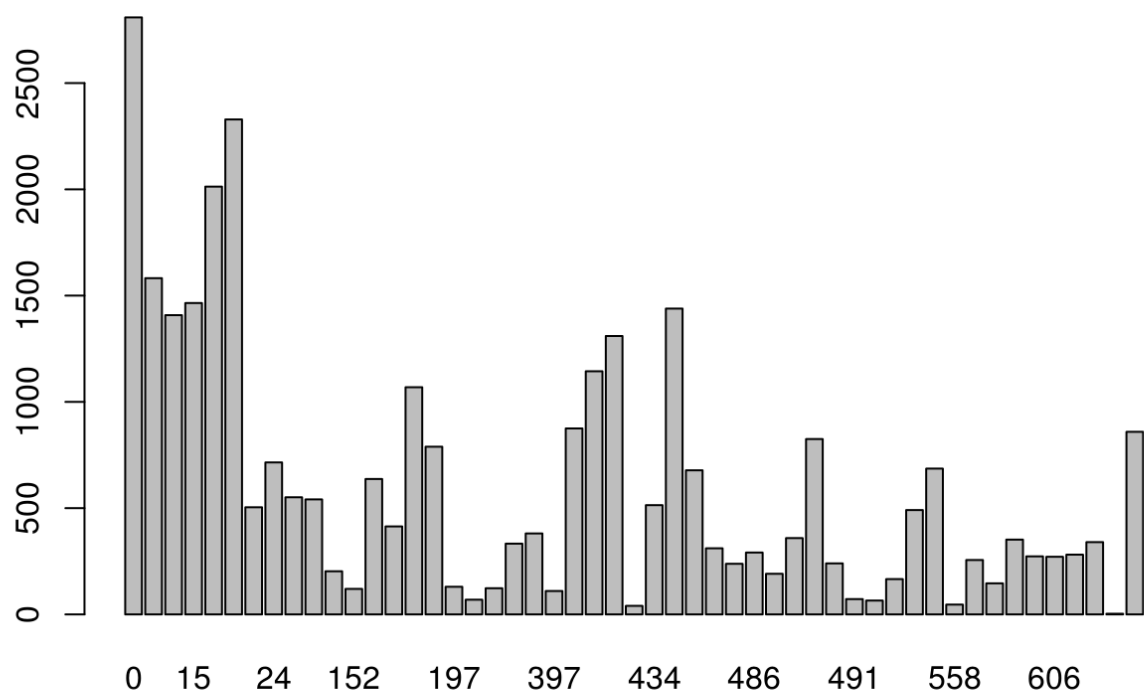
Upper limit: 51.5

Number of upper outliers: 0 0 %

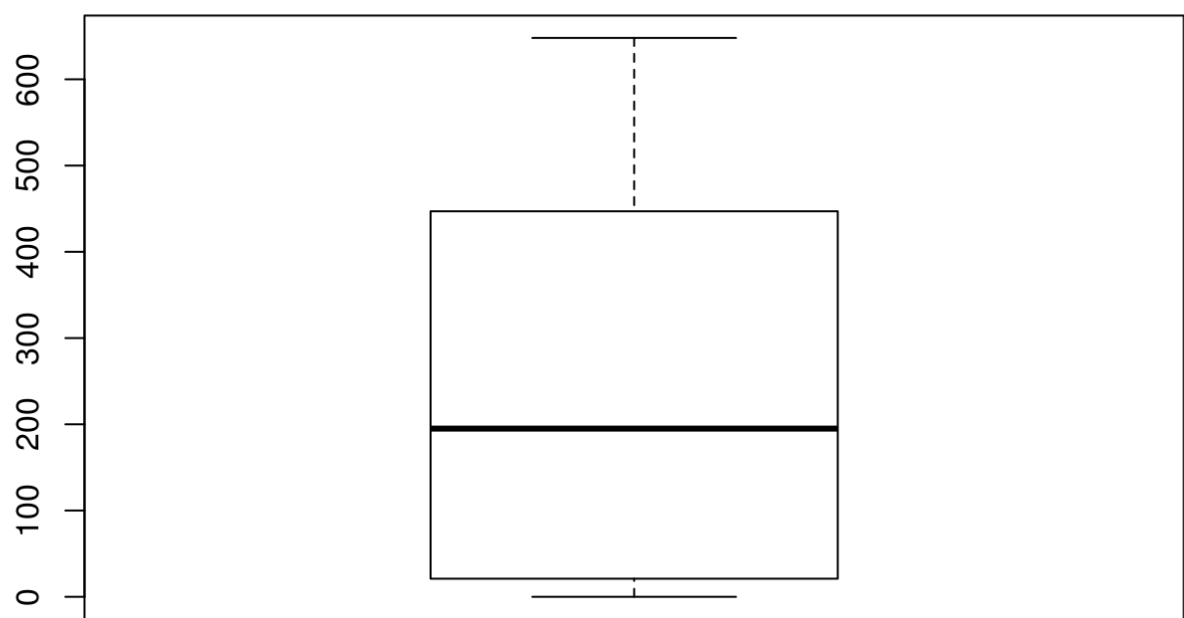
Lower limit: -8.5

Number of upper outliers: 0 0 %

ID_Key_Account_Manager



ID_Key_Account_Manager



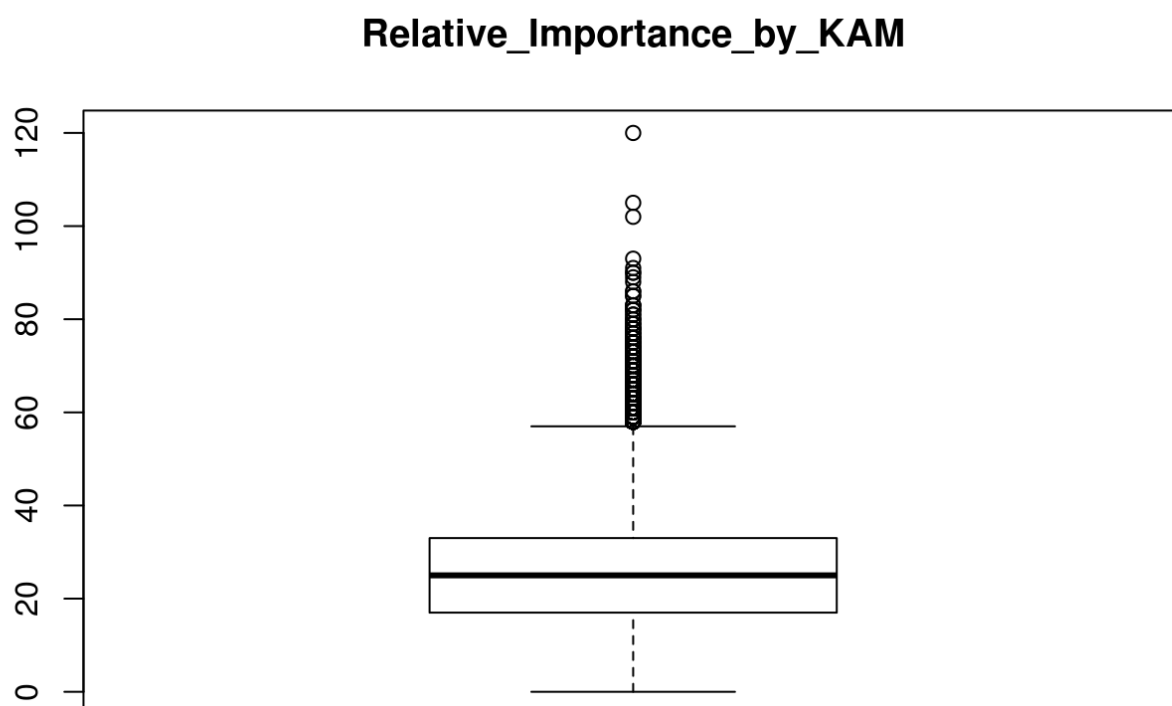
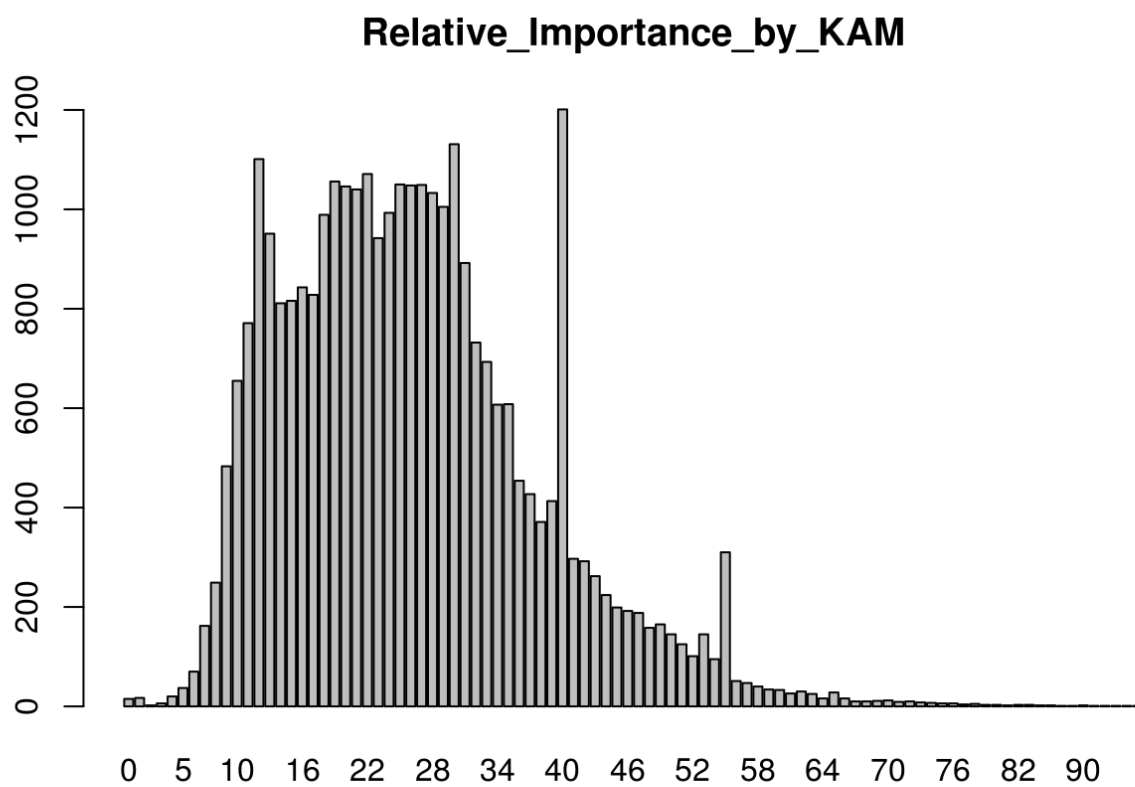
```
$ID_Key_Account_Manager  
[1] "integer"
```

```
Min      : 0  
Max      : 648  
Range    : 0 648  
Sum      : 7394887  
Median   : 195  
Mean     : 238.1069  
Variance : 52372.2  
Skewness : 0.299173  
Kurtosis : 1.44221
```

```
Observations : 31057  
Unique values : 51  
Missing values : 0 0 %  
Zero values   : 2809 9 %  
Neg. values   : 0 0 %
```

```
1Q      : 0  
2Q      : 21  
3Q      : 195  
4Q      : 447  
5Q      : 648
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 1086  
Number of upper outliers: 0 0 %  
Lower limit: -618  
Number of upper outliers: 0 0 %
```



```
$Relative_Importance_by_KAM  
[1] "integer"
```

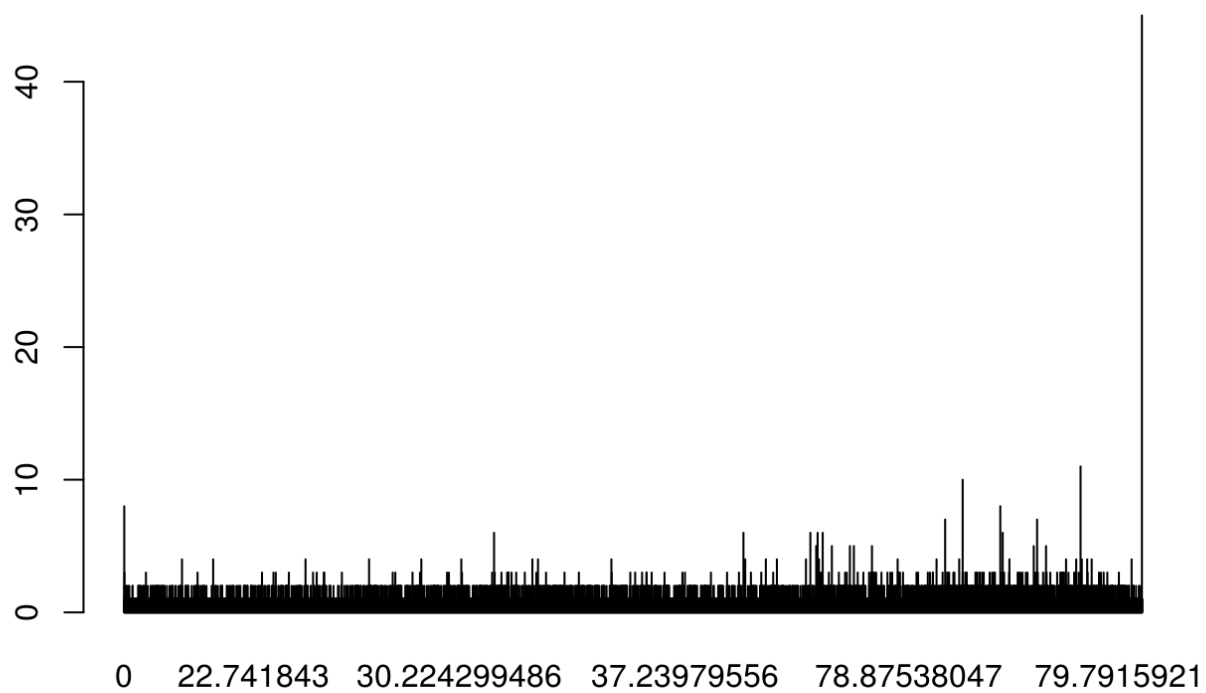
```
Min           : 0  
Max           : 120  
Range         : 0 120  
Sum           : 816435  
Median        : 25  
Mean          : 26.28828  
Variance      : 140.8405  
Skewness      : 0.8161357  
Kurtosis      : 4.012873
```

```
Observations  : 31057  
Unique values : 94  
Missing values : 0    0 %  
Zero values   : 15    0 %  
Neg. values   : 0    0 %
```

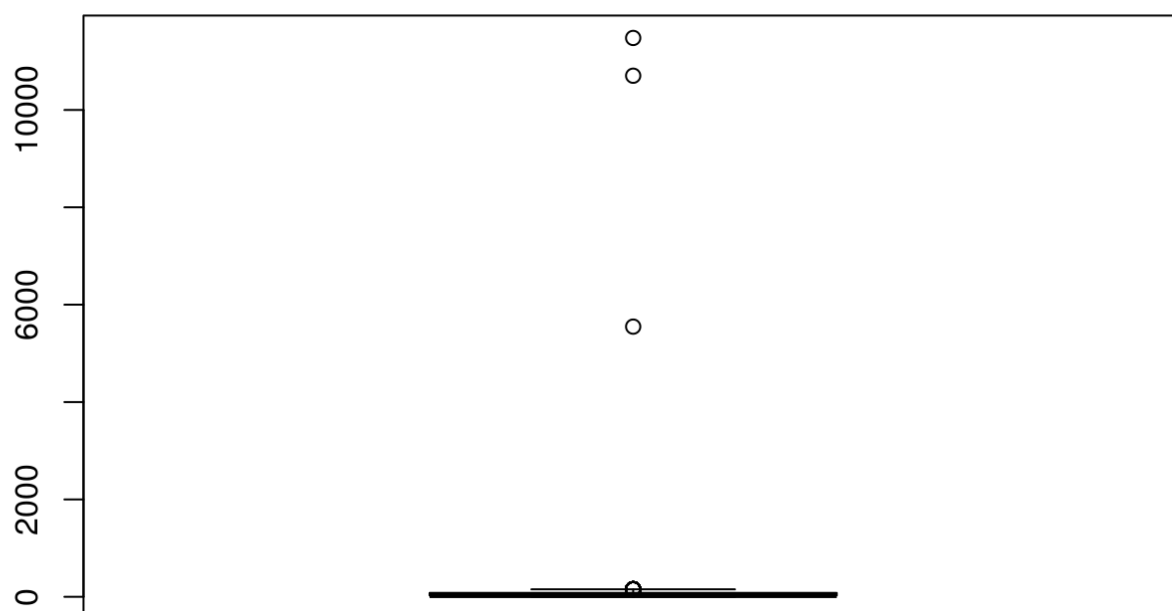
```
1Q    : 0  
2Q    : 17  
3Q    : 25  
4Q    : 33  
5Q    : 120
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 57  
Number of upper outliers: 373  0.01 %  
Lower limit: -7  
Number of upper outliers: 373  0.01 %
```

Potencial_Score



Potencial_Score



\$Potencial_Score

[1] "numeric"

Min : 0
Max : 11479.64
Range : 0 11479.64
Sum : 927334.4
Median : 35.55776
Mean : 51.55581
Variance : 15967.77
Skewness : 79.02184
Kurtosis : 6727.028

Observations : 31057
Unique values : 16095
Missing values : 13070 42.1 %
Zero values : 8 0 %
Neg. values : 0 0 %

1Q : 0
2Q : 28.25378
3Q : 35.55776
4Q : 78.81117
5Q : 11479.64

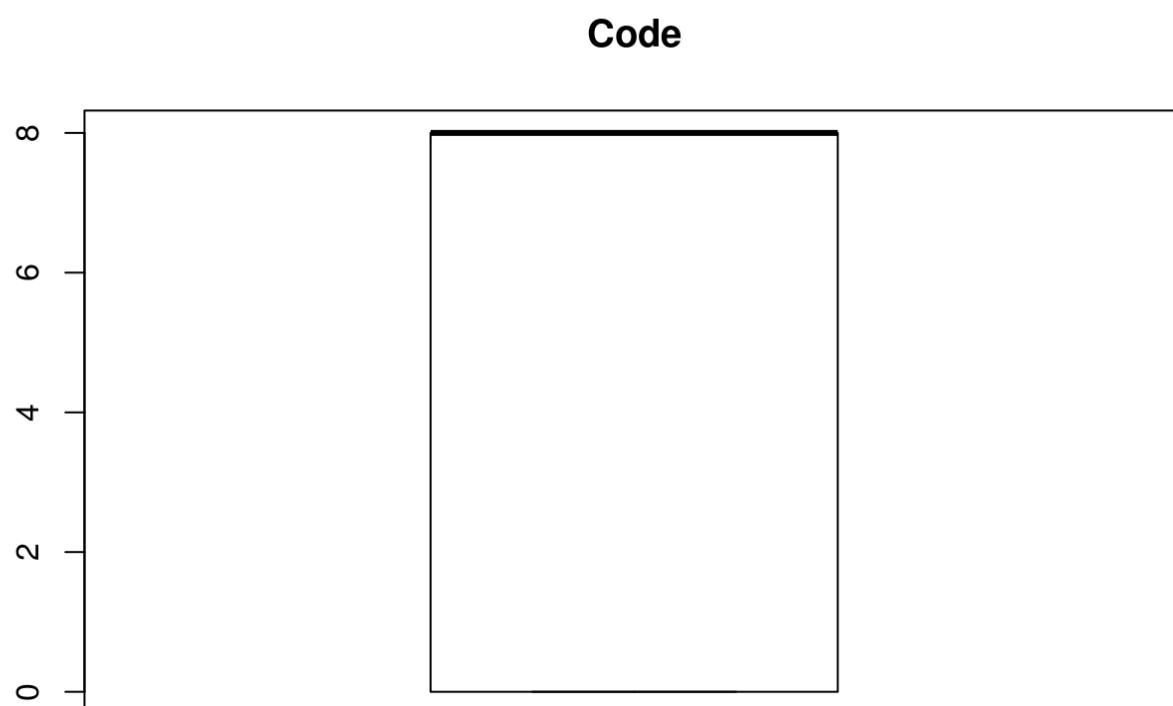
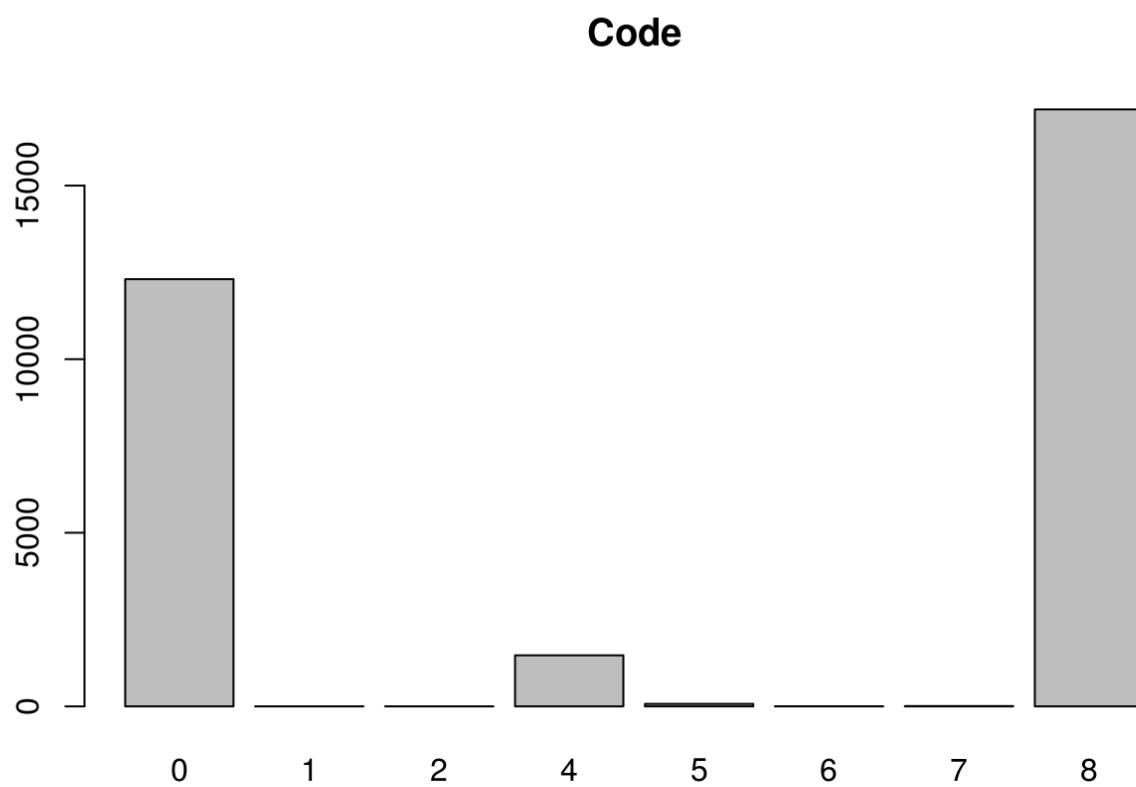
OUTLIERS at SD = 1.5 :

Upper limit: 154.6473

Number of upper outliers: 48 0 %

Lower limit: -47.5823

Number of upper outliers: 48 0 %



```

$Code
[1] "integer"

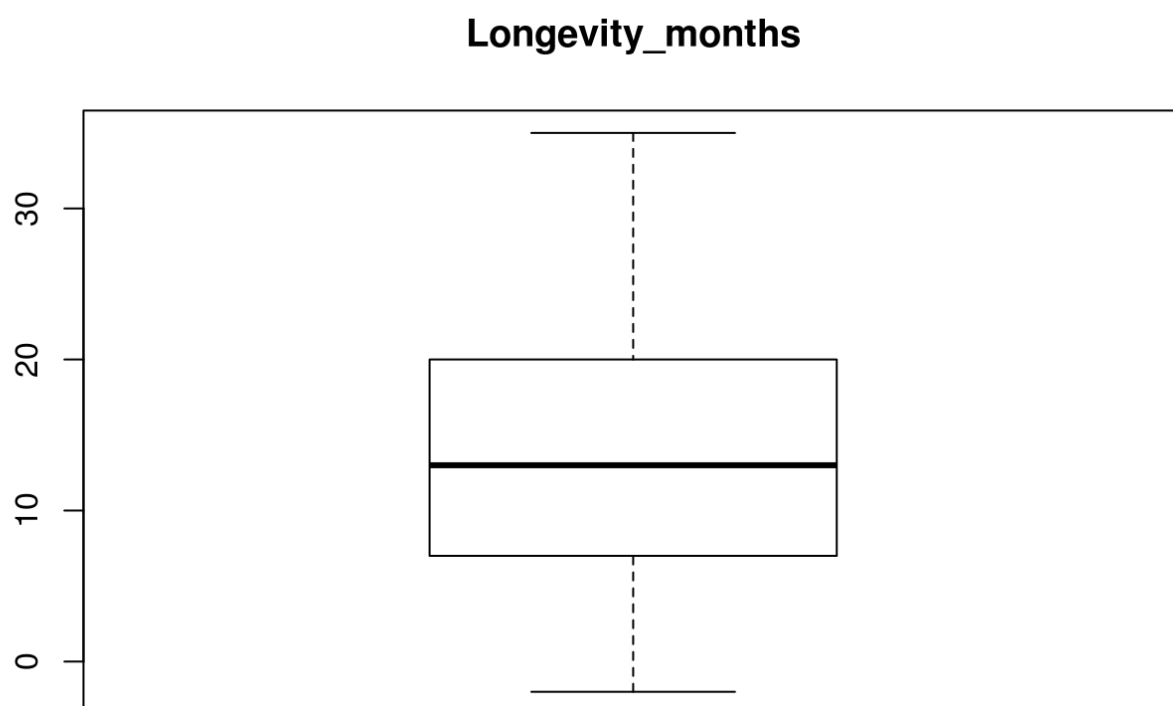
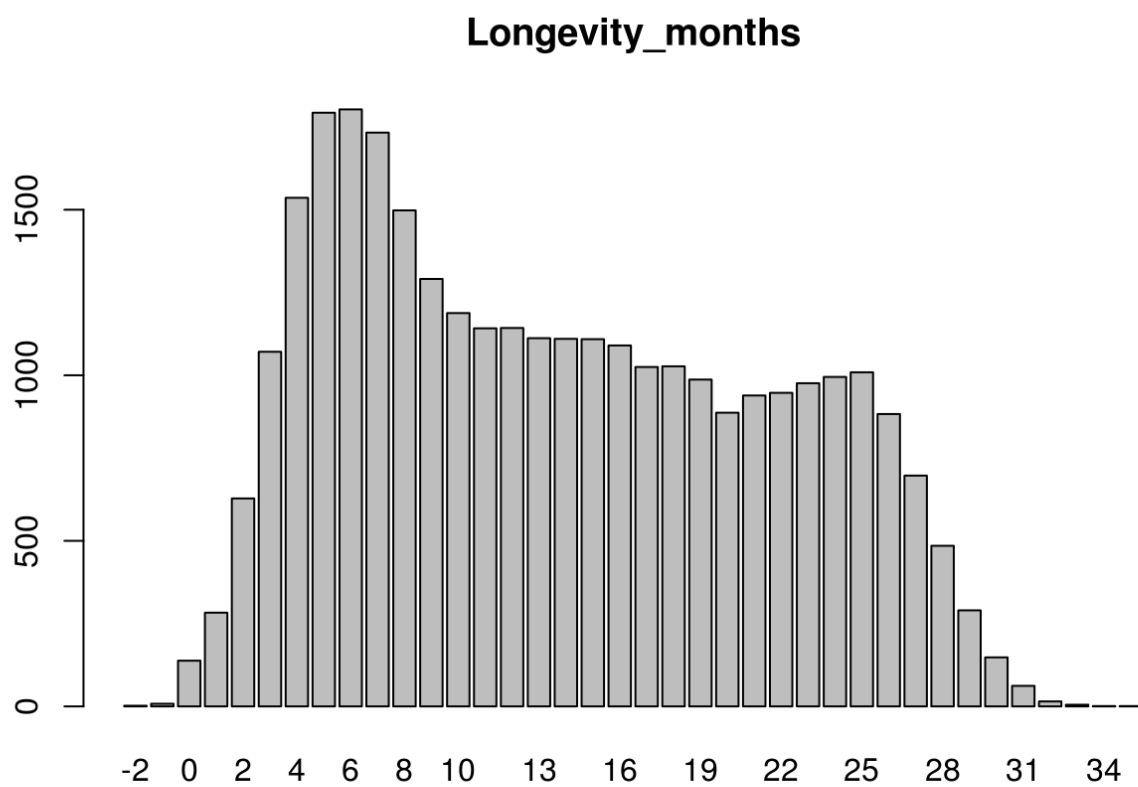
Min      : 0
Max      : 8
Range    : 0 8
Sum      : 143880
Median   : 8
Mean     : 4.632772
Variance : 14.80367
Skewness : -0.3208116
Kurtosis : 1.15783

Observations : 31057
Unique values : 8
Missing values : 0 0 %
Zero values   : 12306 39.6 %
Neg. values   : 0 0 %

1Q      : 0
2Q      : 0
3Q      : 8
4Q      : 8
5Q      : 8

OUTLIERS at SD = 1.5 :
Upper limit: 20
Number of upper outliers: 0 0 %
Lower limit: -12
Number of upper outliers: 0 0 %

```



\$Longevity_months

[1] "integer"

Min : -2
Max : 35
Range : -2 35
Sum : 423983
Median : 13
Mean : 13.65177
Variance : 60.4496
Skewness : 0.2839657
Kurtosis : 1.914376

Observations : 31057
Unique values : 38
Missing values : 0 0 %
Zero values : 138 0.4 %
Neg. values : 10 0 %

1Q : -2
2Q : 7
3Q : 13
4Q : 20
5Q : 35

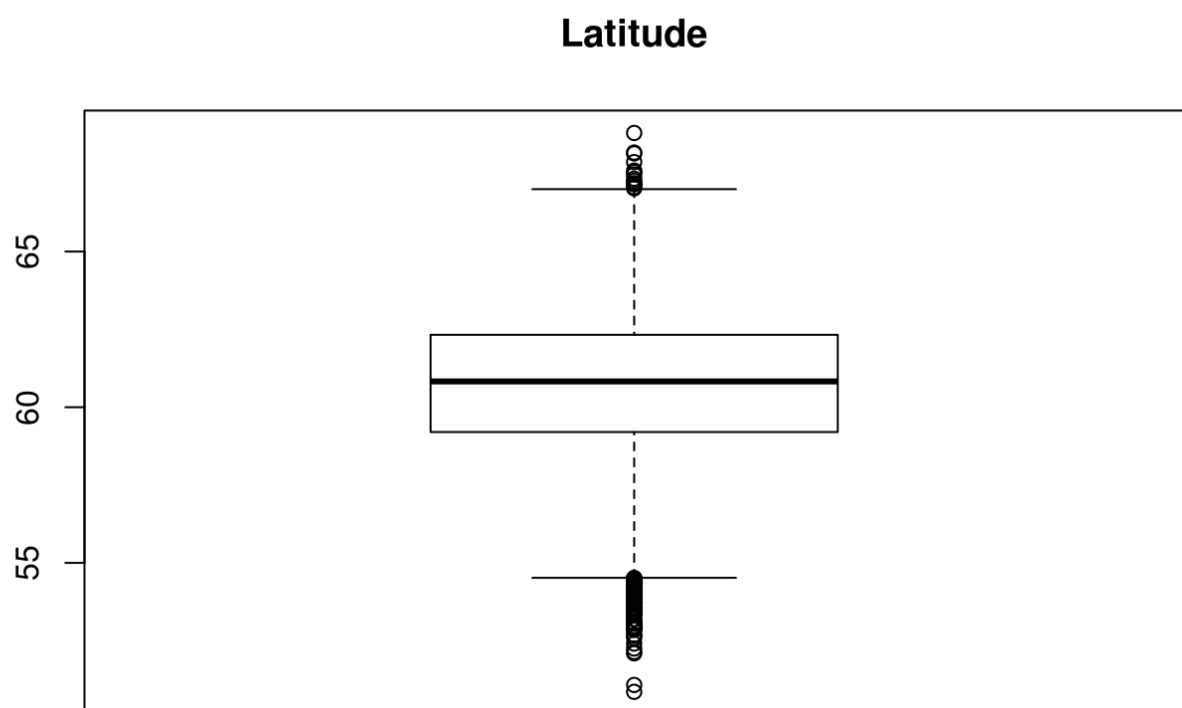
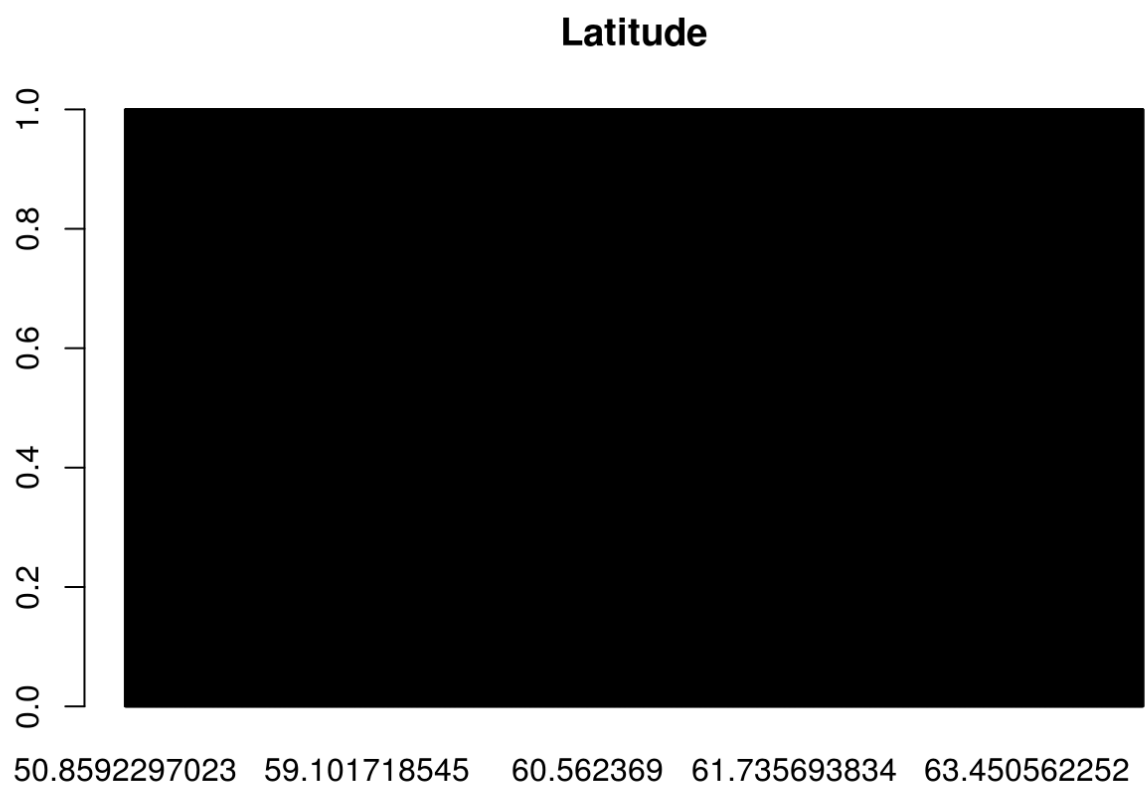
OUTLIERS at SD = 1.5 :

Upper limit: 39.5

Number of upper outliers: 0 0 %

Lower limit: -12.5

Number of upper outliers: 0 0 %



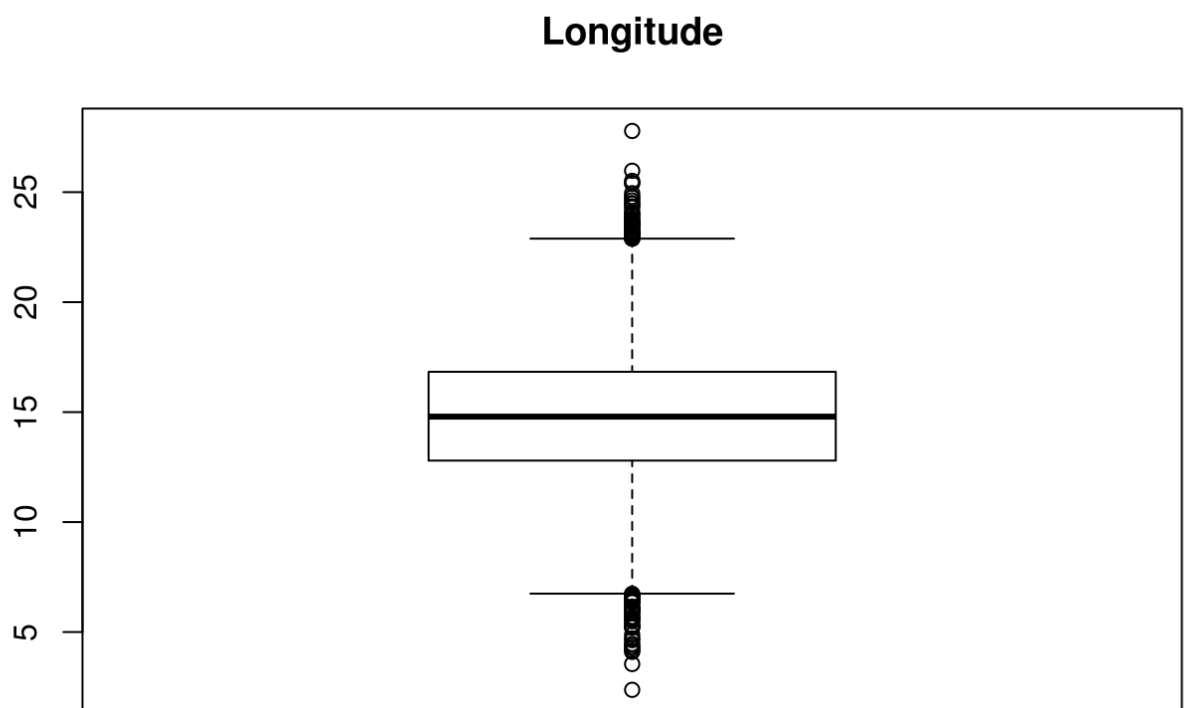
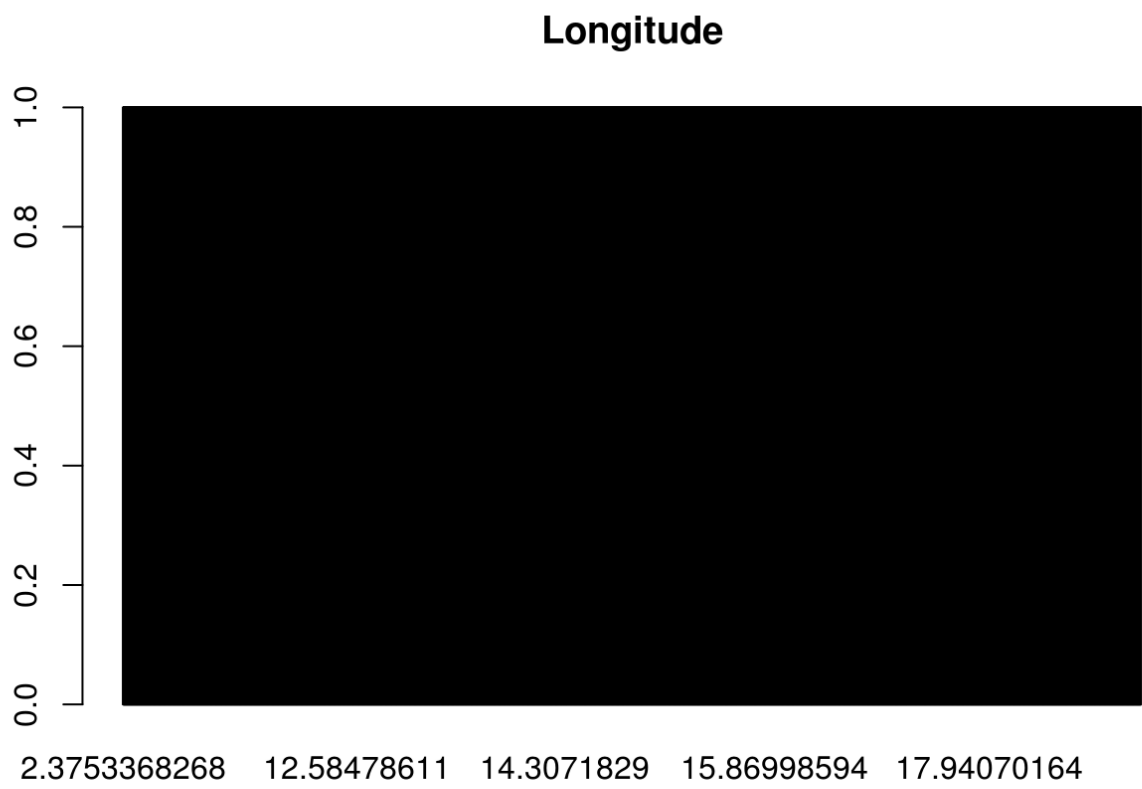
```
$Latitude  
[1] "numeric"
```

```
Min      : 50.85923  
Max      : 68.81024  
Range    : 50.85923 68.81024  
Sum      : 783141.7  
Median   : 60.8288  
Mean     : 60.71336  
Variance : 5.494926  
Skewness : -0.2660386  
Kurtosis : 3.127945
```

```
Observations : 31057  
Unique values : 12900  
Missing values : 18158 58.5 %  
Zero values   : 0 0 %  
Neg. values   : 0 0 %
```

```
1Q      : 50.85923  
2Q      : 59.20277  
3Q      : 60.8288  
4Q      : 62.32558  
5Q      : 68.81024
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 67.00979  
Number of upper outliers: 14 0 %  
Lower limit: 54.51856  
Number of upper outliers: 14 0 %
```



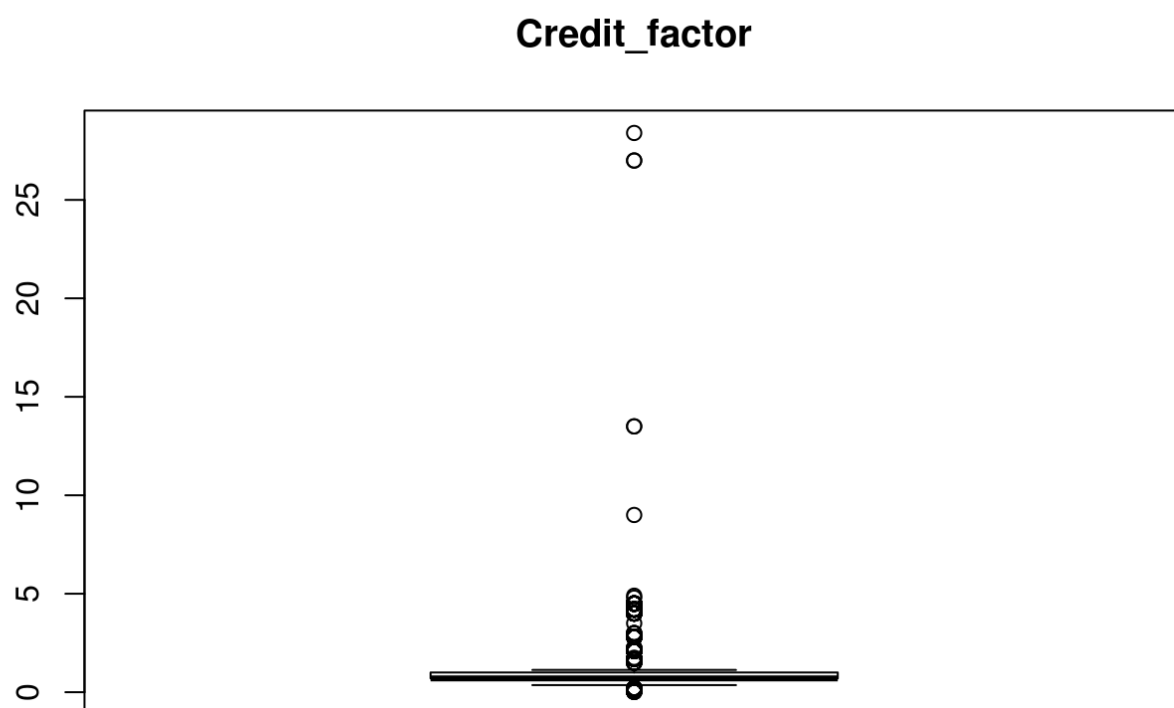
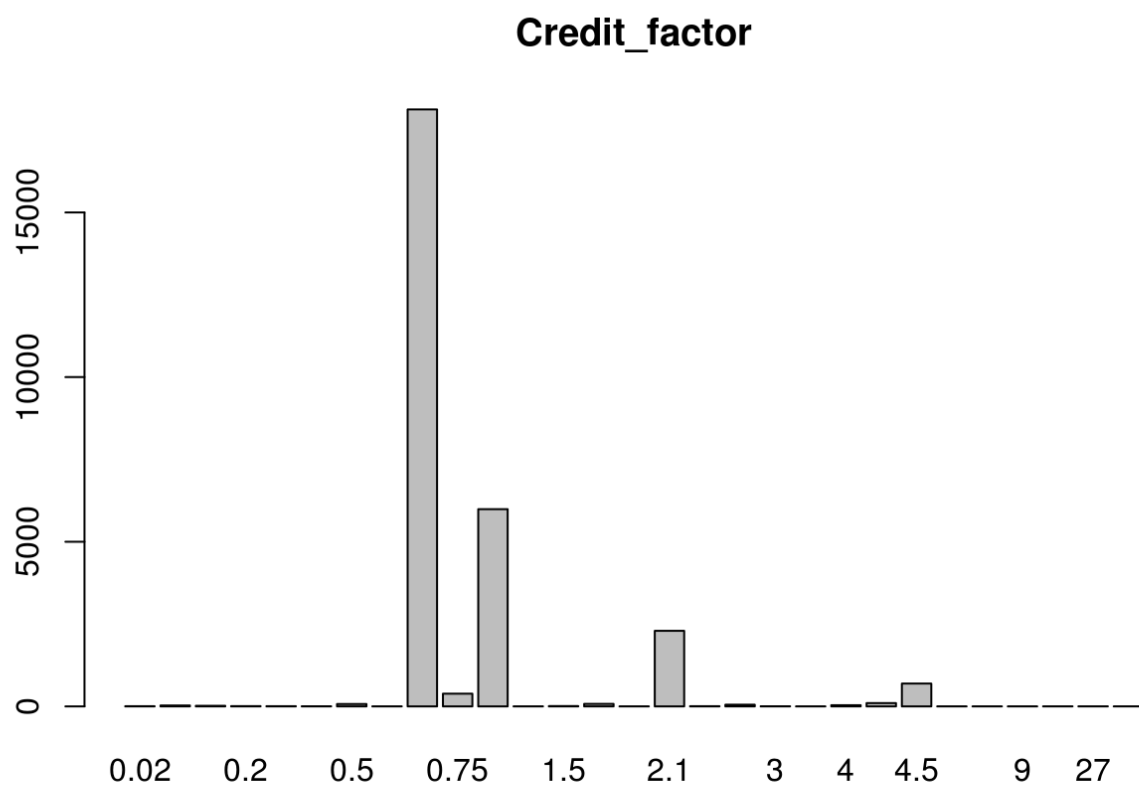

```
$Longitude  
[1] "numeric"
```

```
Min      : 2.375337  
Max      : 27.78317  
Range    : 2.375337 27.78317  
Sum      : 191027.5  
Median   : 14.79399  
Mean     : 14.80948  
Variance : 9.135925  
Skewness : 0.002634197  
Kurtosis : 3.074671
```

```
Observations : 31057  
Unique values : 12900  
Missing values : 18158 58.5 %  
Zero values   : 0 0 %  
Neg. values   : 0 0 %
```

```
1Q : 2.375337  
2Q : 12.79496  
3Q : 14.79399  
4Q : 16.83149  
5Q : 27.78317
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 22.88628  
Number of upper outliers: 55 0 %  
Lower limit: 6.740165  
Number of upper outliers: 55 0 %
```



\$Credit_factor

[1] "numeric"

Min : 0.02
Max : 28.4
Range : 0.02 28.4
Sum : 27970.33
Median : 0.7
Mean : 1.001372
Variance : 0.6120742
Skewness : 7.257559
Kurtosis : 157.8957

Observations : 31057
Unique values : 30
Missing values : 3125 10.1 %
Zero values : 0 0 %
Neg. values : 0 0 %

1Q : 0.02
2Q : 0.7
3Q : 0.7
4Q : 1
5Q : 28.4

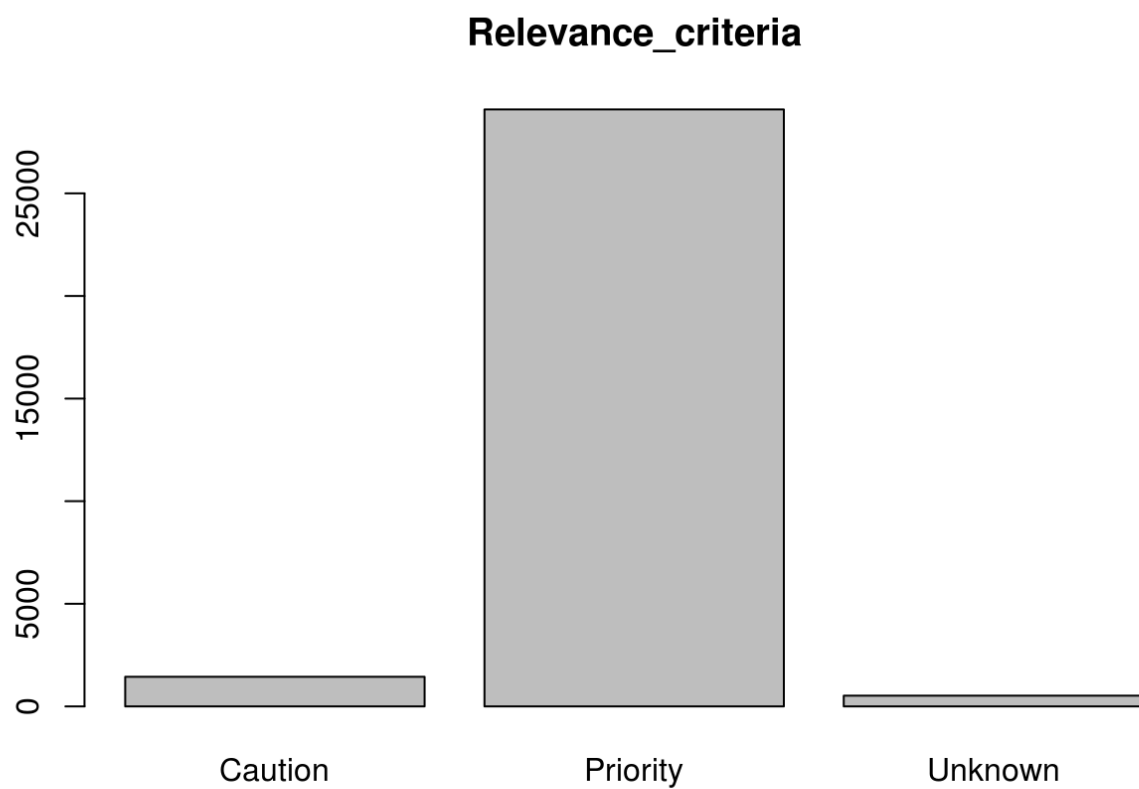
OUTLIERS at SD = 1.5 :

Upper limit: 1.45

Number of upper outliers: 3281 0.11 %

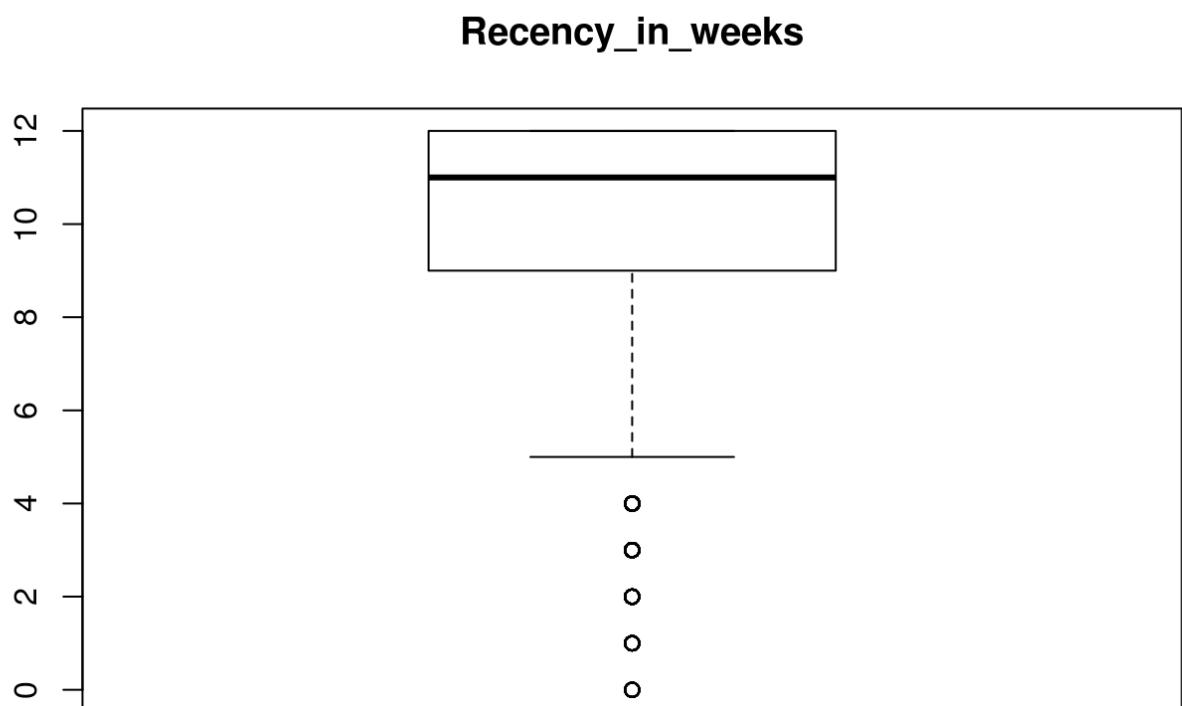
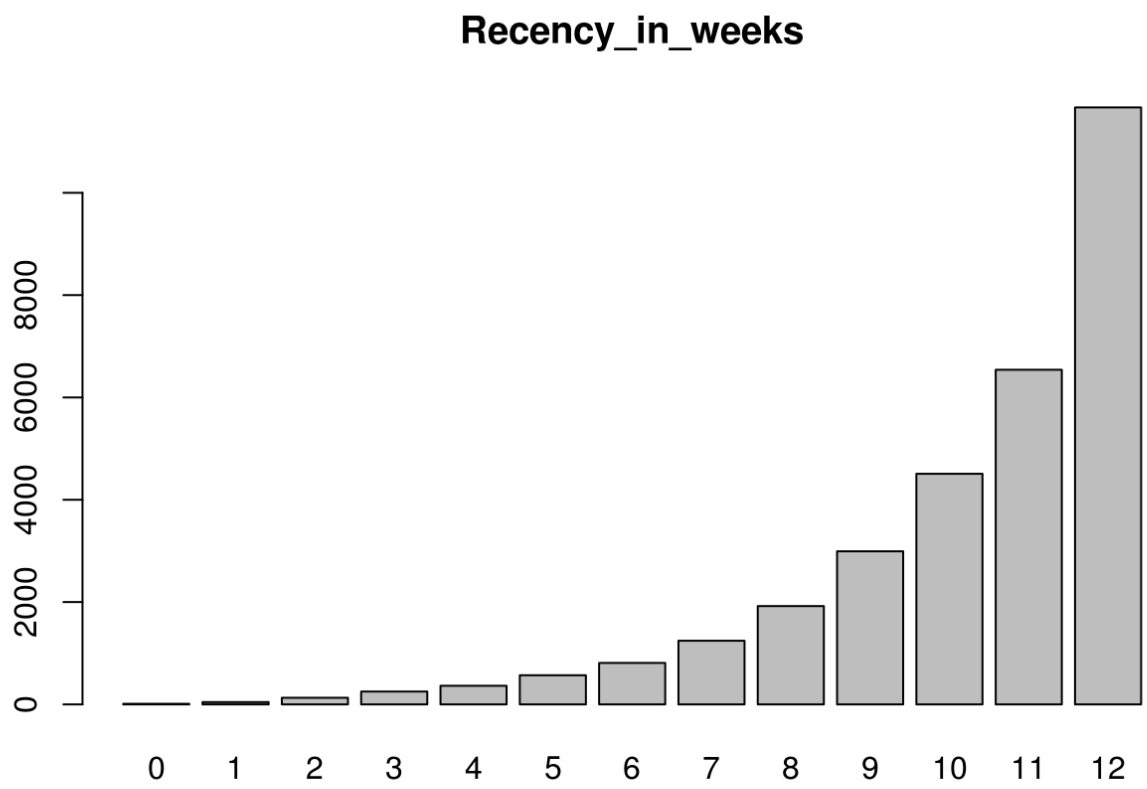
Lower limit: 0.25

Number of upper outliers: 3281 0.11 %



```
$Relevance_criteria  
[1] "factor"
```

```
Observations : 31057  
Unique values : 3  
Missing values : 0 0 %  
Zero values : 0 0 %
```



\$Recency_in_weeks

[1] "integer"

Min : 0
Max : 12
Range : 0 12
Sum : 318302
Median : 11
Mean : 10.24896
Variance : 4.468799
Skewness : -1.547018
Kurtosis : 5.320494

Observations : 31057
Unique values : 13
Missing values : 0 0 %
Zero values : 11 0 %
Neg. values : 0 0 %

1Q : 0
2Q : 9
3Q : 11
4Q : 12
5Q : 12

OUTLIERS at SD = 1.5 :

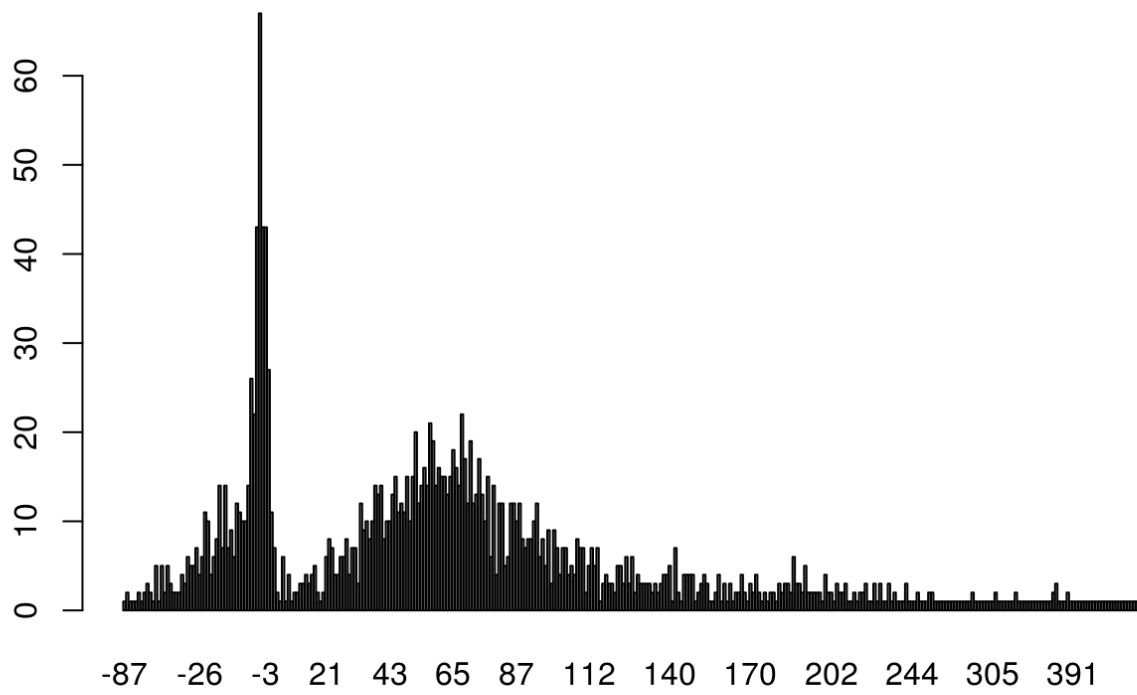
Upper limit: 16.5

Number of upper outliers: 0 0 %

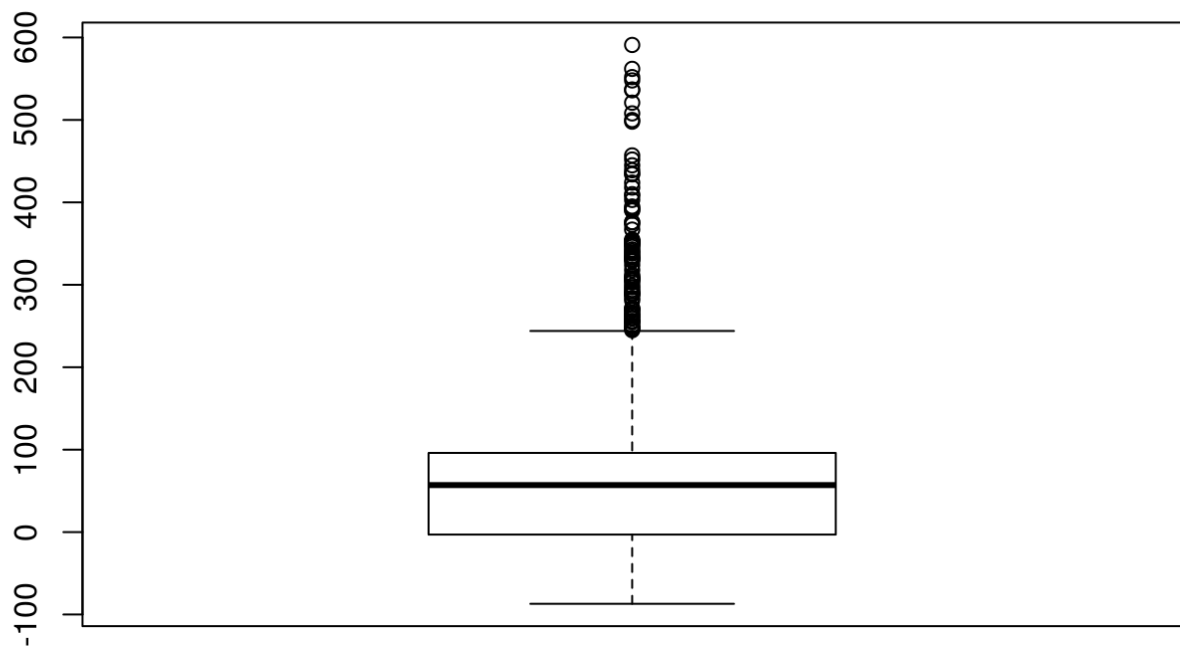
Lower limit: 4.5

Number of upper outliers: 0 0 %

Returns_in_percentage



Returns_in_percentage



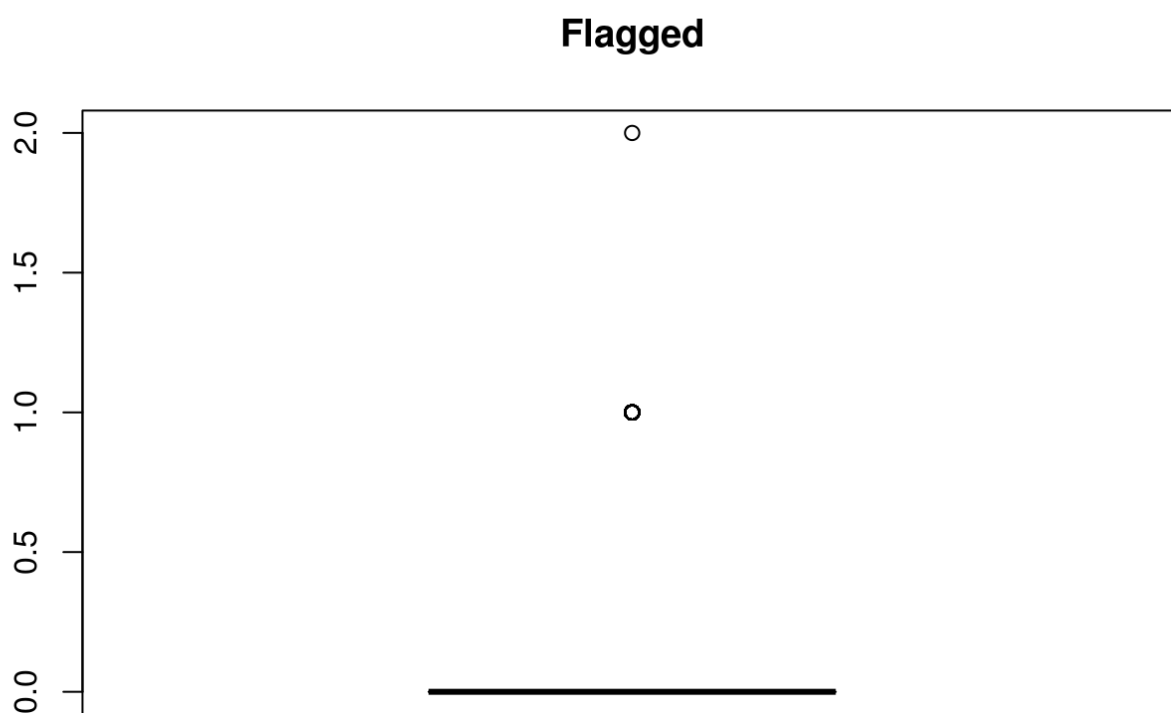
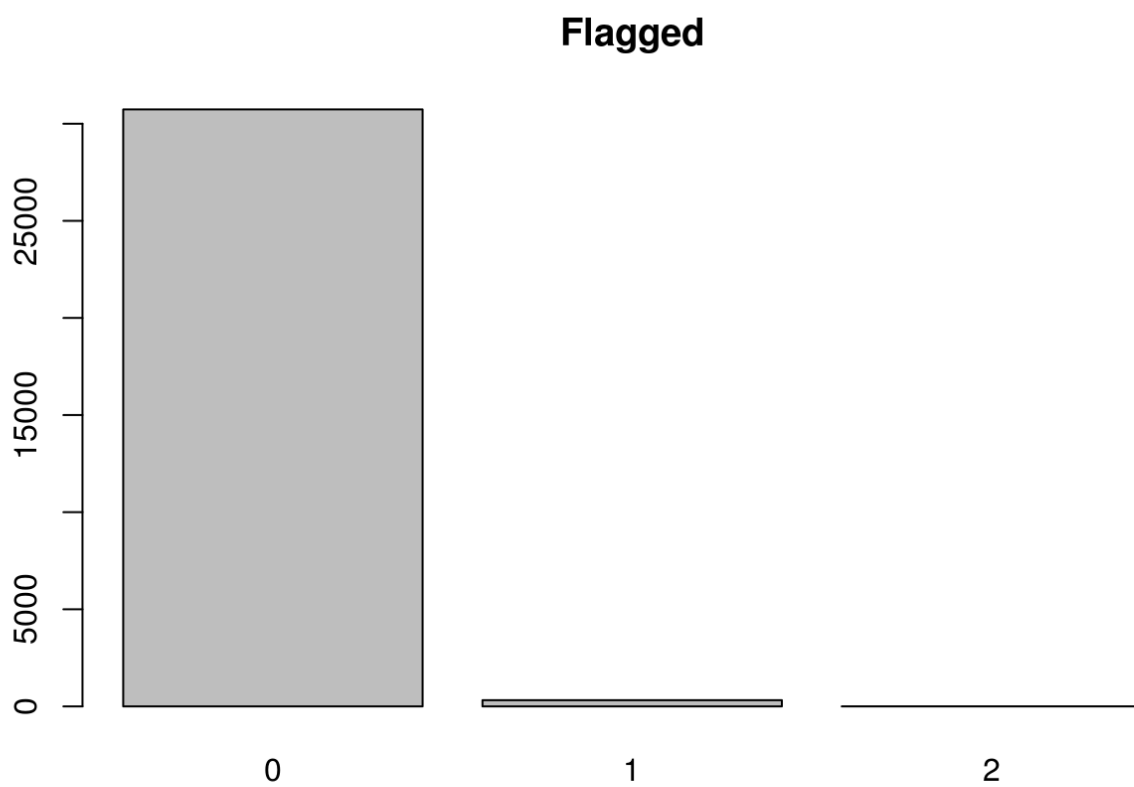
```
$Returns_in_percentage  
[1] "integer"
```

```
Min      : -87  
Max      : 591  
Range    : -87 591  
Sum      : 133793  
Median   : 57  
Mean     : 70.08539  
Variance : 7813.868  
Skewness : 1.952368  
Kurtosis : 8.69725
```

```
Observations : 31057  
Unique values : 354  
Missing values : 29148 93.9 %  
Zero values : 7 0 %  
Neg. values : 519 1.7 %
```

```
1Q : -87  
2Q : -3  
3Q : 57  
4Q : 96  
5Q : 591
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 244.5  
Number of upper outliers: 89 0 %  
Lower limit: -151.5  
Number of upper outliers: 89 0 %
```

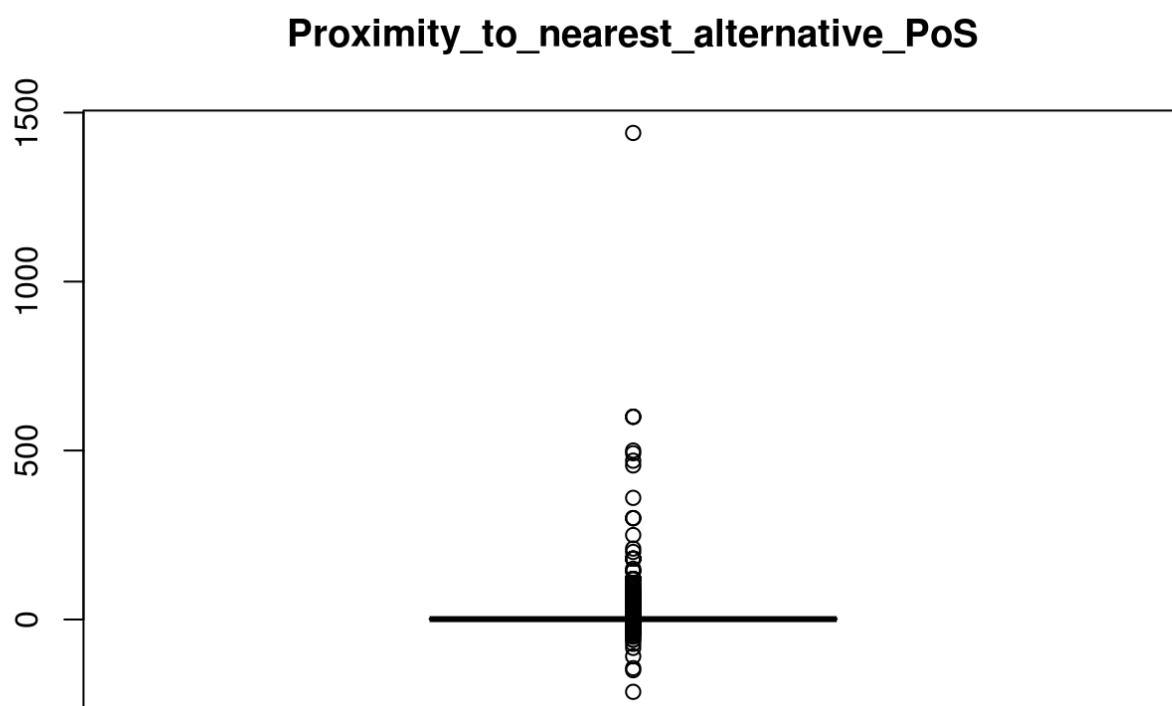
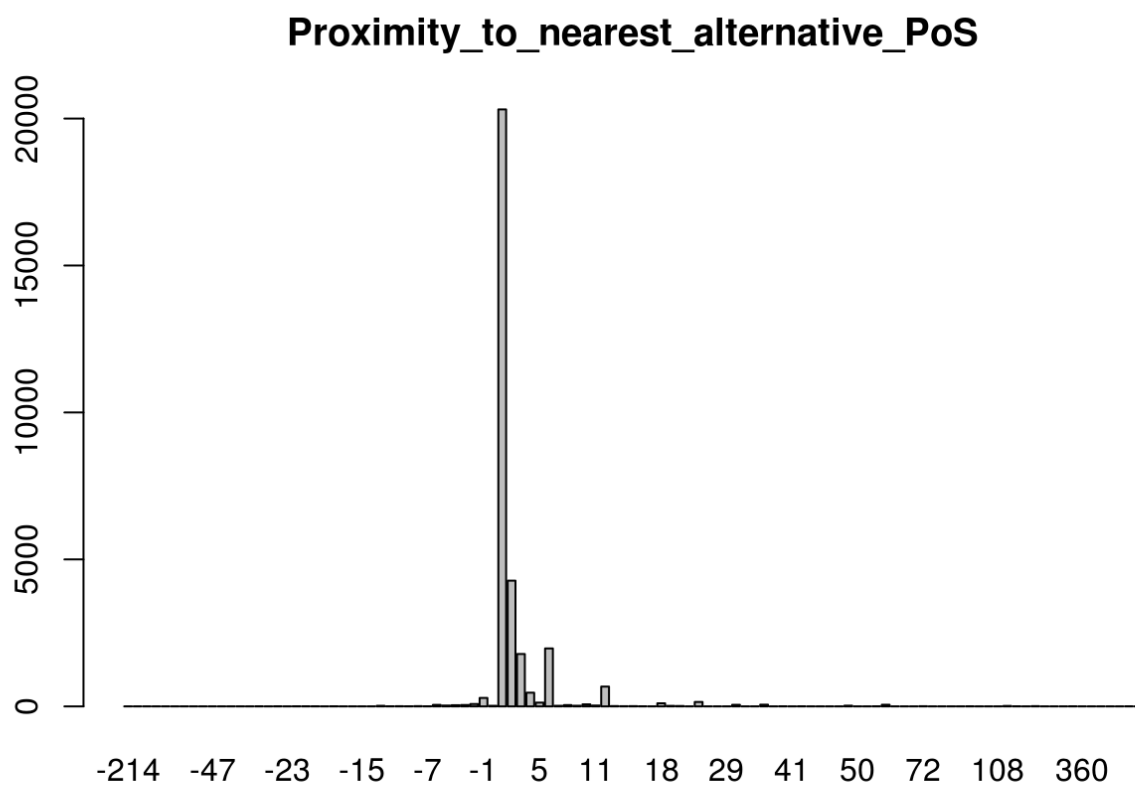
```
$Flagged  
[1] "integer"
```

```
Min      : 0  
Max      : 2  
Range    : 0 2  
Sum      : 322  
Median   : 0  
Mean     : 0.01036803  
Variance : 0.01032527  
Skewness : 9.759443  
Kurtosis : 97.43994
```

```
Observations : 31057  
Unique values : 3  
Missing values : 0 0 %  
Zero values   : 30736 99 %  
Neg. values   : 0 0 %
```

```
1Q      : 0  
2Q      : 0  
3Q      : 0  
4Q      : 0  
5Q      : 2
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 0  
Number of upper outliers: 321 0.01 %  
Lower limit: 0  
Number of upper outliers: 321 0.01 %
```



```
$Proximity_to_nearest_alternative_PoS  
[1] "integer"
```

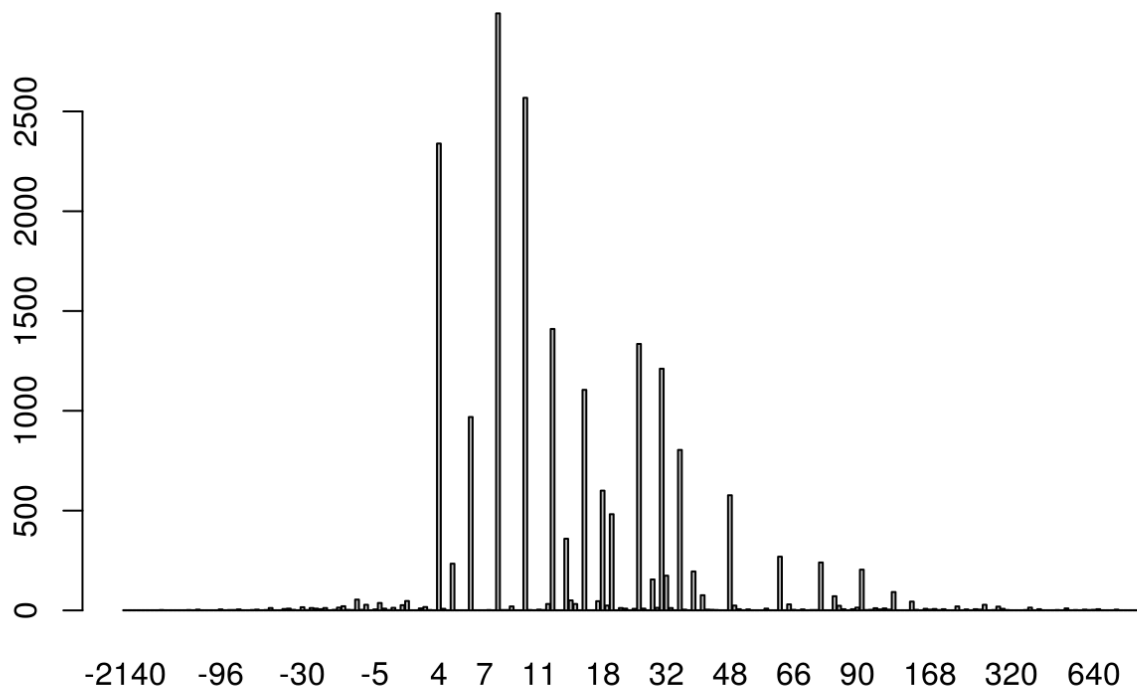
```
Min           : -214  
Max           : 1440  
Range         : -214 1440  
Sum           : 83537  
Median        : 1  
Mean          : 2.689796  
Variance      : 196.4182  
Skewness      : 50.21133  
Kurtosis      : 4108.89
```

```
Observations  : 31057  
Unique values : 109  
Missing values : 0    0 %  
Zero values   : 19    0.1 %  
Neg. values   : 637   2.1 %
```

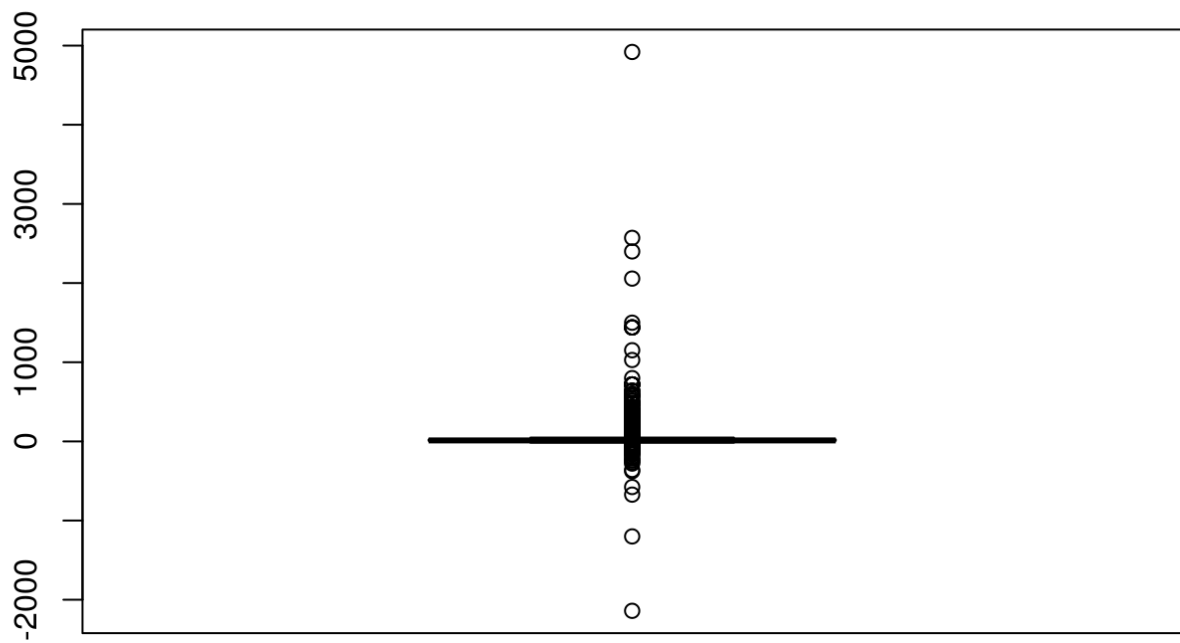
```
1Q    : -214  
2Q    : 1  
3Q    : 1  
4Q    : 2  
5Q    : 1440
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 3.5  
Number of upper outliers: 4031  0.13 %  
Lower limit: -0.5  
Number of upper outliers: 4031  0.13 %
```

Promotional_percentage



Promotional_percentage



```
$Promotional_percentage
```

```
[1] "numeric"
```

```
Min           : -2140
Max           : 4920
Range         : -2140 4920
Sum           : 432971.3
Median        : 12
Mean          : 22.01959
Variance      : 4485.927
Skewness      : 28.59573
Kurtosis      : 1818.156
```

```
Observations  : 31057
Unique values  : 225
Missing values : 11394  36.7 %
Zero values    : 47    0.2 %
Neg. values    : 366   1.2 %
```

```
1Q    : -2140
2Q    : 8
3Q    : 12
4Q    : 24
5Q    : 4920
```

```
OUTLIERS at SD = 1.5 :
```

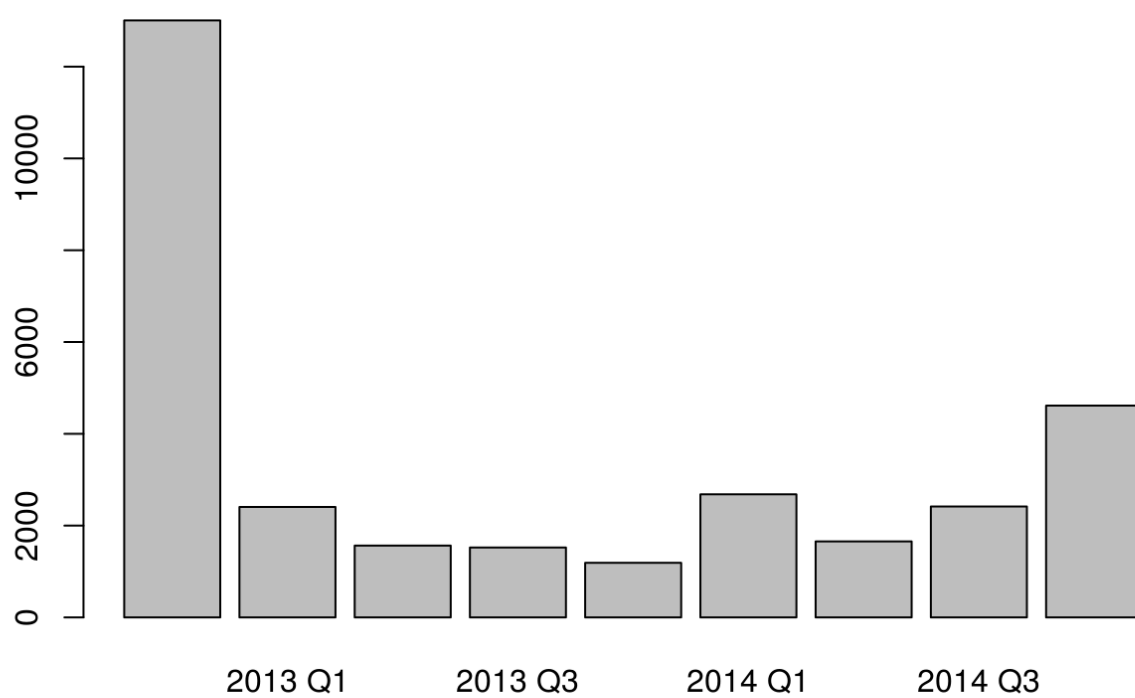
```
Upper limit: 48
```

```
Number of upper outliers: 1308  0.04 %
```

```
Lower limit: -16
```

```
Number of upper outliers: 1308  0.04 %
```

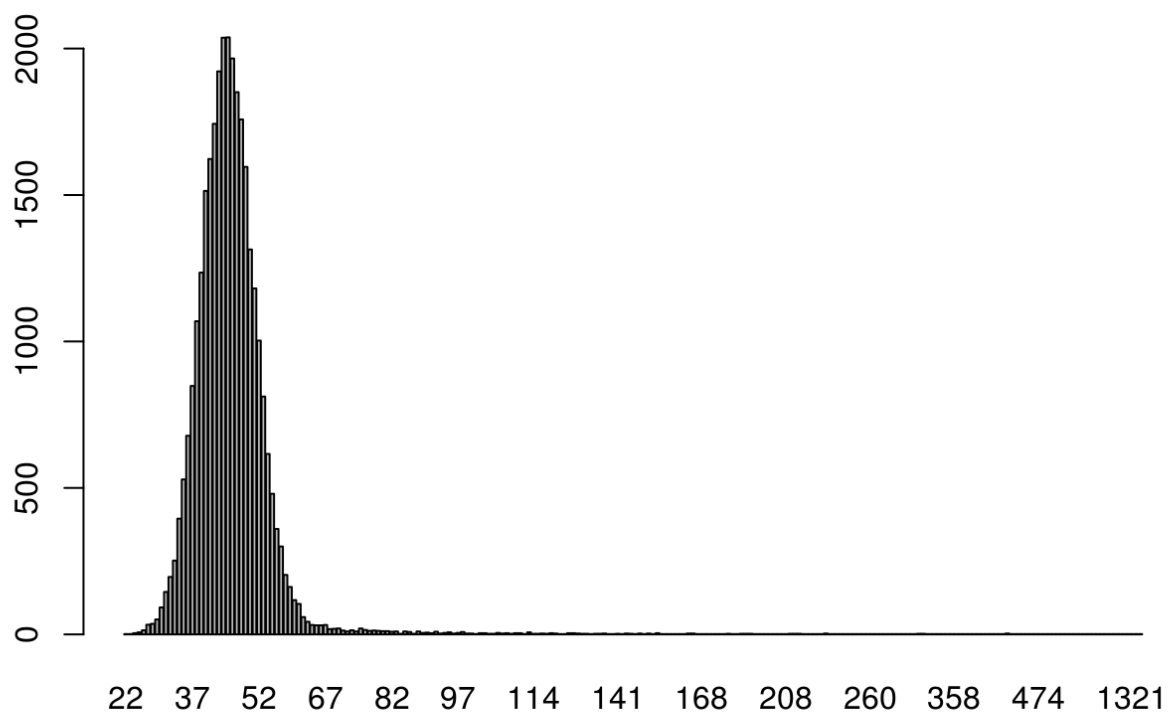
Best_YYYYQQ



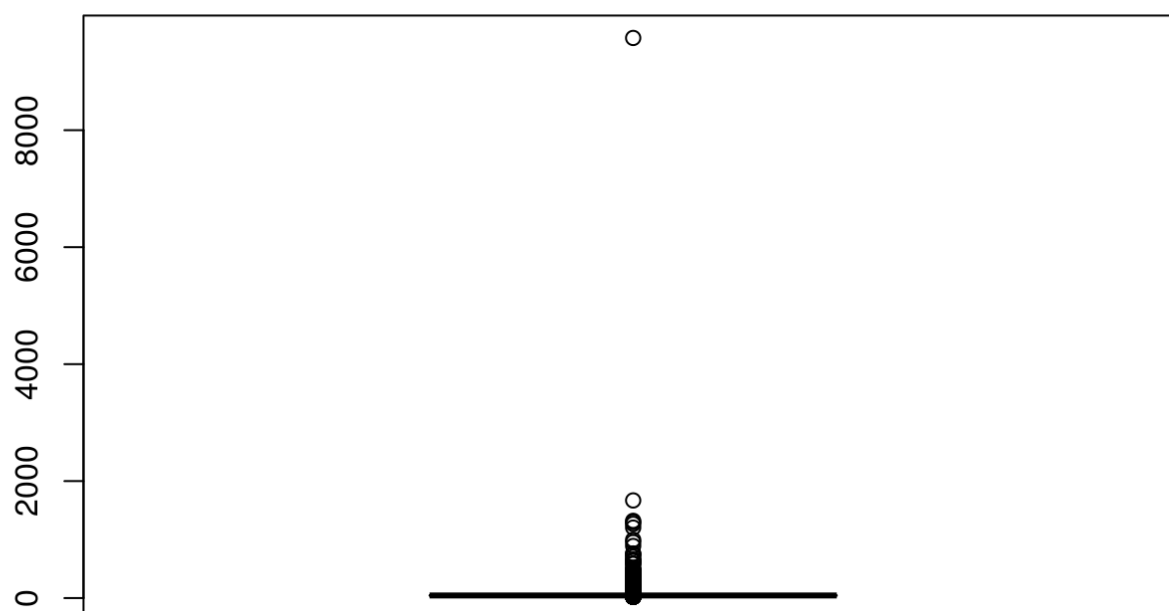
```
$Best_YYYYQQ  
[1] "factor"
```

```
Observations : 31057  
Unique values : 9  
Missing values : 0 0 %  
Zero values : 0 0 %
```

Alcohol_Beverages



Alcohol_Beverages



\$Alcohol_Beverages

[1] "integer"

Min : 22
Max : 9577
Range : 22 9577
Sum : 1466922
Median : 45
Mean : 47.23322
Variance : 3692.178
Skewness : 126.875
Kurtosis : 19530.15

Observations : 31057
Unique values : 230
Missing values : 0 0 %
Zero values : 0 0 %
Neg. values : 0 0 %

1Q : 22
2Q : 41
3Q : 45
4Q : 49
5Q : 9577

OUTLIERS at SD = 1.5 :

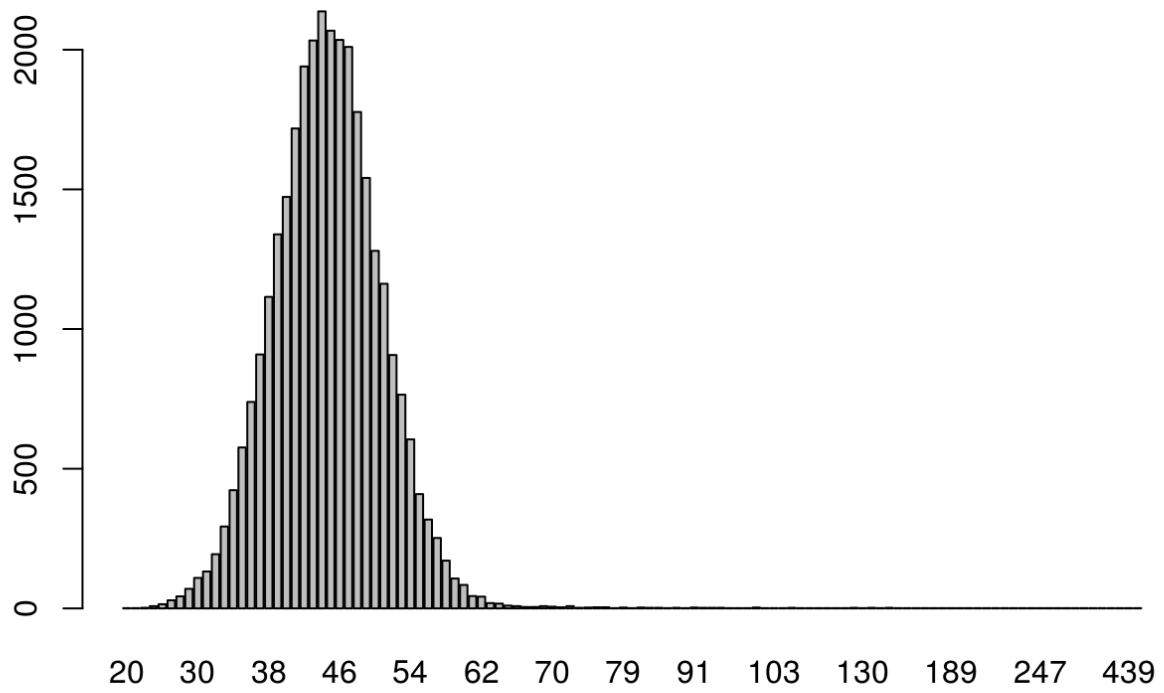
Upper limit: 61

Number of upper outliers: 771 0.02 %

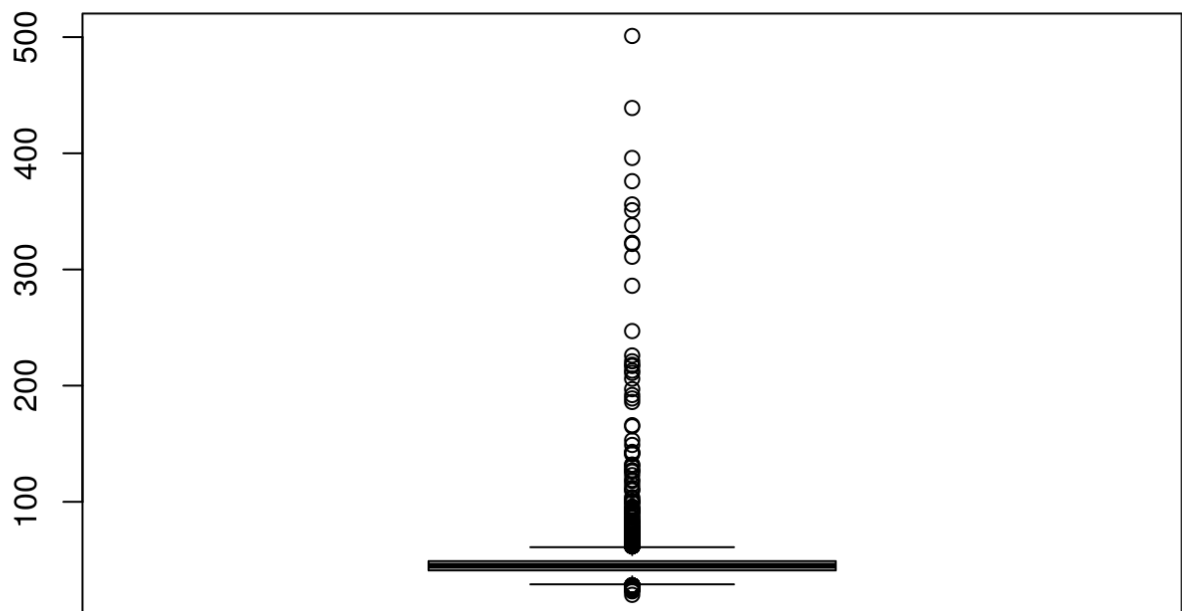
Lower limit: 29

Number of upper outliers: 771 0.02 %

Bottled_Water



Bottled_Water



\$Bottled_Water

[1] "integer"

Min : 20
Max : 501
Range : 20 501
Sum : 1395716
Median : 45
Mean : 44.94046
Variance : 91.72994
Skewness : 17.23004
Kurtosis : 580.5146

Observations : 31057
Unique values : 115
Missing values : 0 0 %
Zero values : 0 0 %
Neg. values : 0 0 %

1Q : 20
2Q : 41
3Q : 45
4Q : 49
5Q : 501

OUTLIERS at SD = 1.5 :

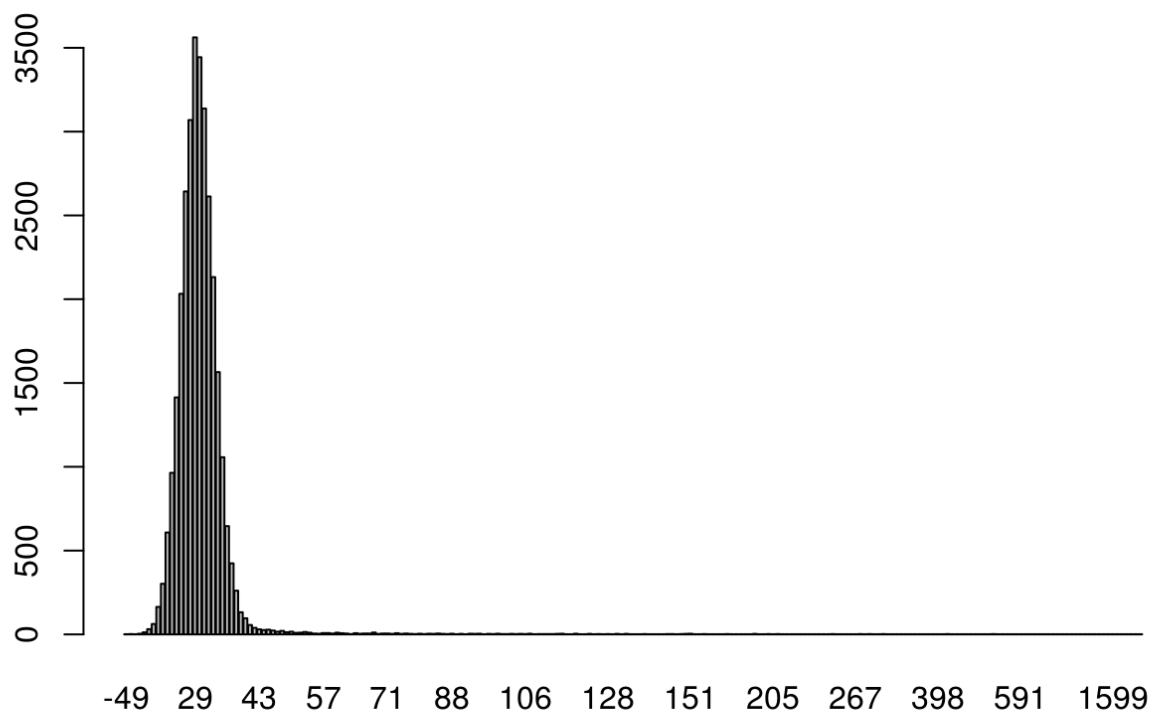
Upper limit: 61

Number of upper outliers: 223 0.01 %

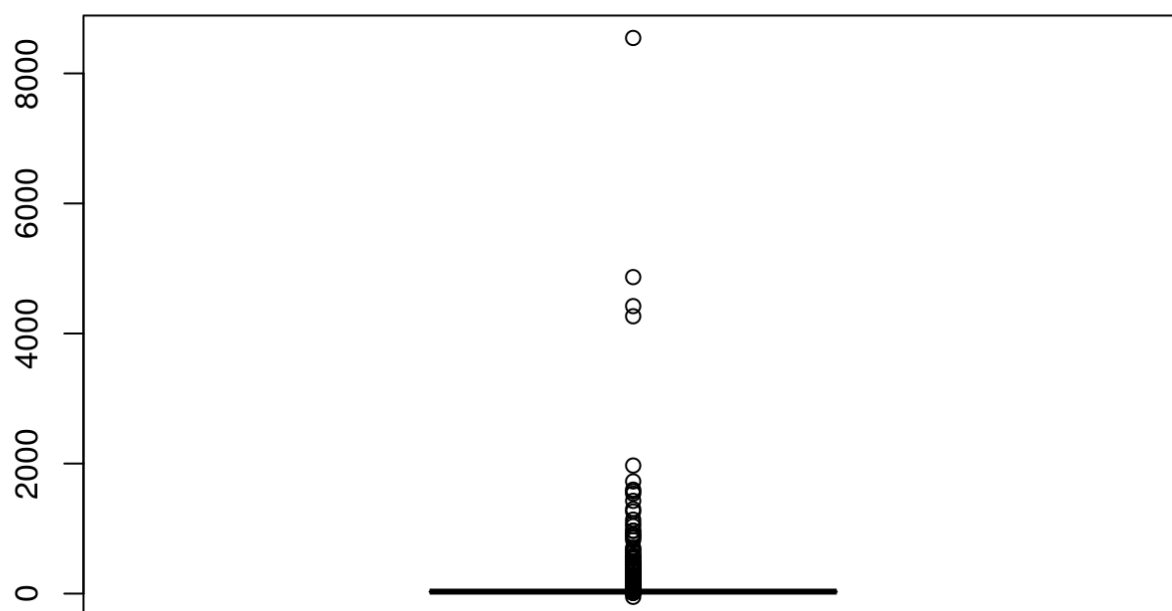
Lower limit: 29

Number of upper outliers: 223 0.01 %

Bread



Bread



```
$Bread  
[1] "integer"
```

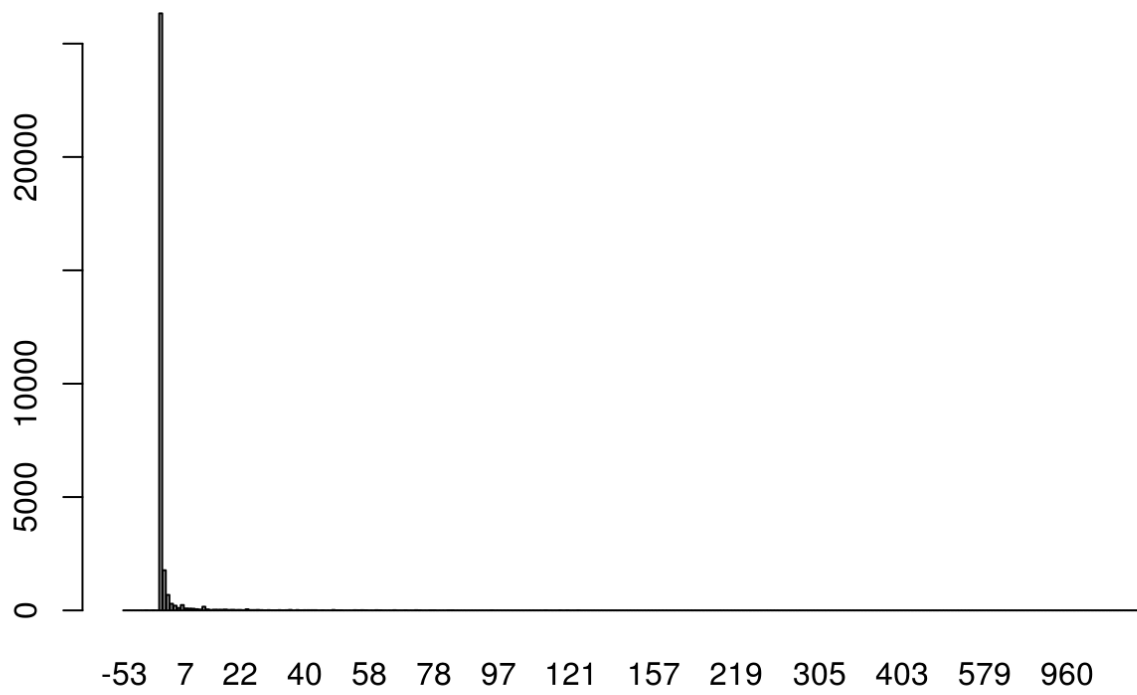
```
Min      : -49  
Max      : 8546  
Range    : -49 8546  
Sum      : 1009615  
Median   : 30  
Mean     : 32.50845  
Variance : 5506.102  
Skewness : 73.46571  
Kurtosis : 6956.75
```

```
Observations : 31057  
Unique values : 222  
Missing values : 0 0 %  
Zero values   : 0 0 %  
Neg. values   : 1 0 %
```

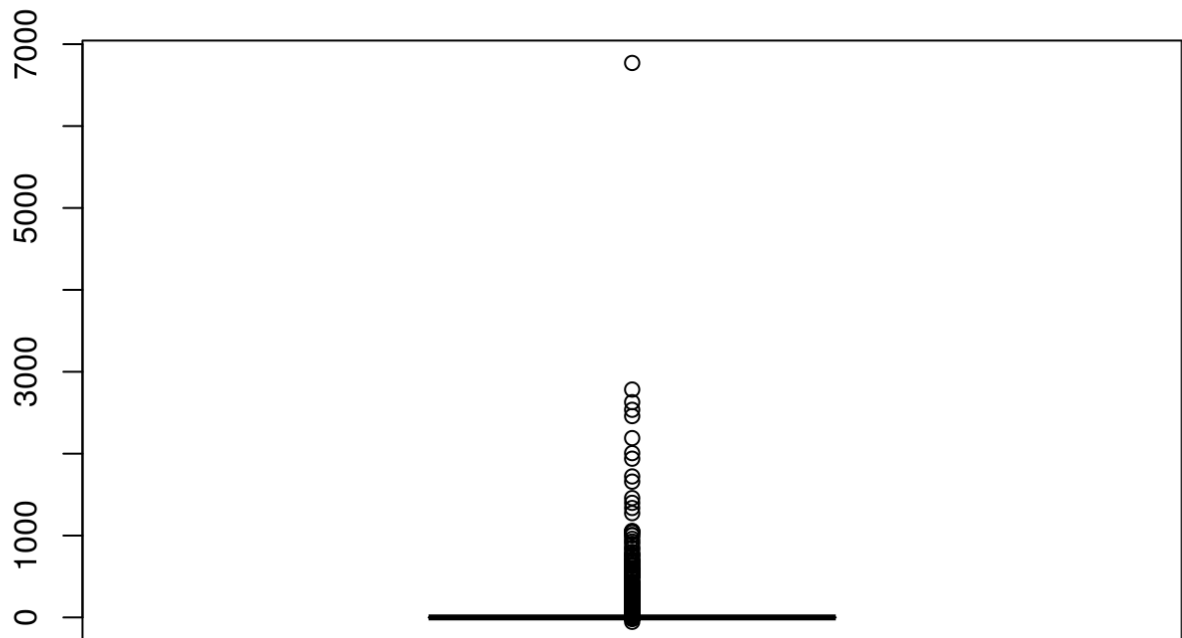
```
1Q      : -49  
2Q      : 27  
3Q      : 30  
4Q      : 32  
5Q      : 8546
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 39.5  
Number of upper outliers: 774 0.02 %  
Lower limit: 19.5  
Number of upper outliers: 774 0.02 %
```

Containers



Containers



```
$Containers  
[1] "integer"
```

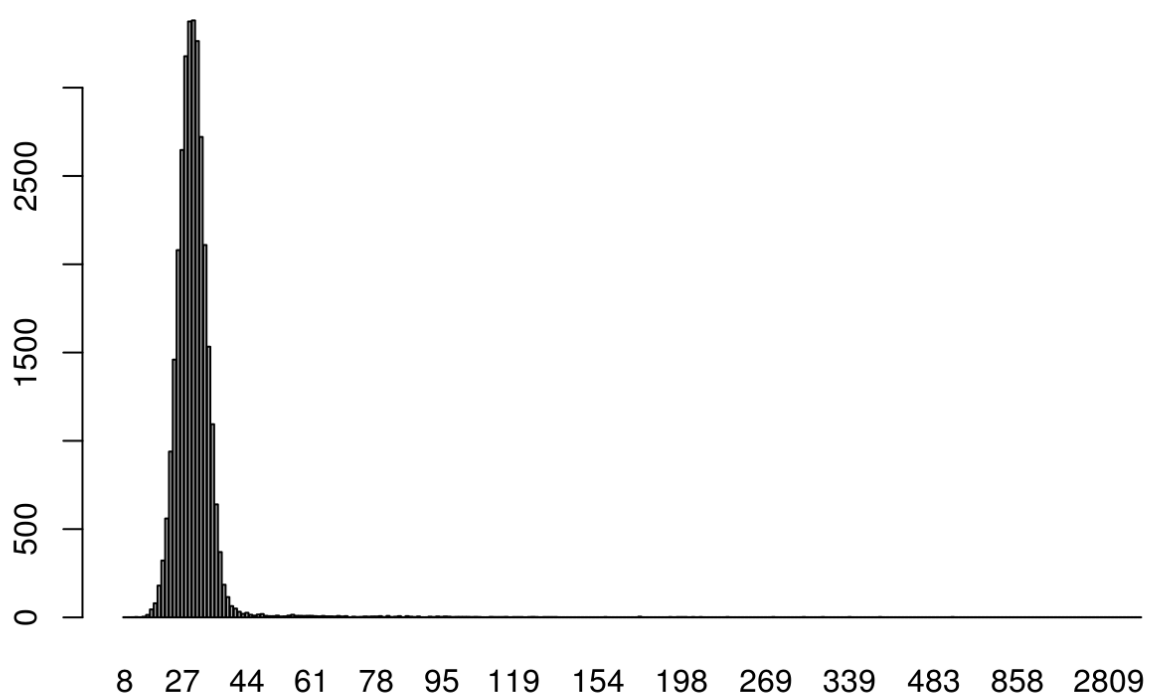
```
Min      : -53  
Max      : 6771  
Range    : -53 6771  
Sum      : 137117  
Median   : 0  
Mean     : 4.415011  
Variance : 4297.6  
Skewness : 51.16801  
Kurtosis : 4150.518
```

```
Observations : 31057  
Unique values : 283  
Missing values : 0 0 %  
Zero values   : 26333 84.8 %  
Neg. values   : 19 0.1 %
```

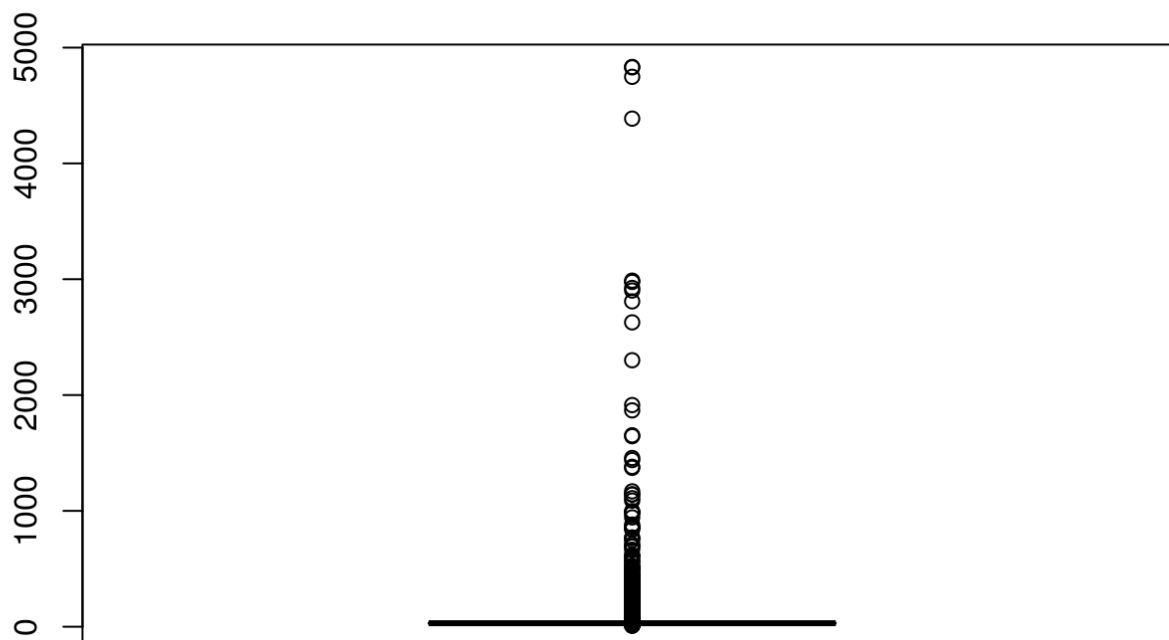
```
1Q      : -53  
2Q      : 0  
3Q      : 0  
4Q      : 0  
5Q      : 6771
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 0  
Number of upper outliers: 4705 0.15 %  
Lower limit: 0  
Number of upper outliers: 4705 0.15 %
```

Dairy



Dairy




```

$Dairy
[1] "integer"

Min      : 8
Max      : 4833
Range    : 8 4833
Sum      : 1040859
Median   : 30
Mean     : 33.51447
Variance : 6117.958
Skewness : 41.01196
Kurtosis : 2066.099

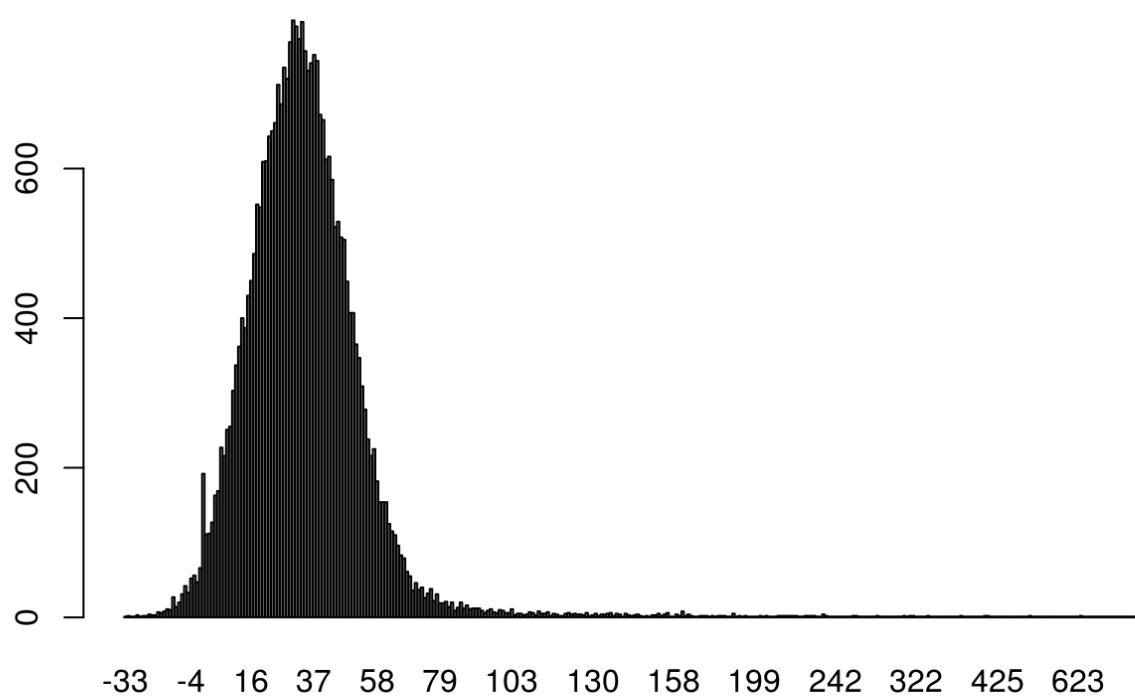
Observations : 31057
Unique values : 267
Missing values : 0 0 %
Zero values   : 0 0 %
Neg. values   : 0 0 %

1Q      : 8
2Q      : 27
3Q      : 30
4Q      : 32
5Q      : 4833

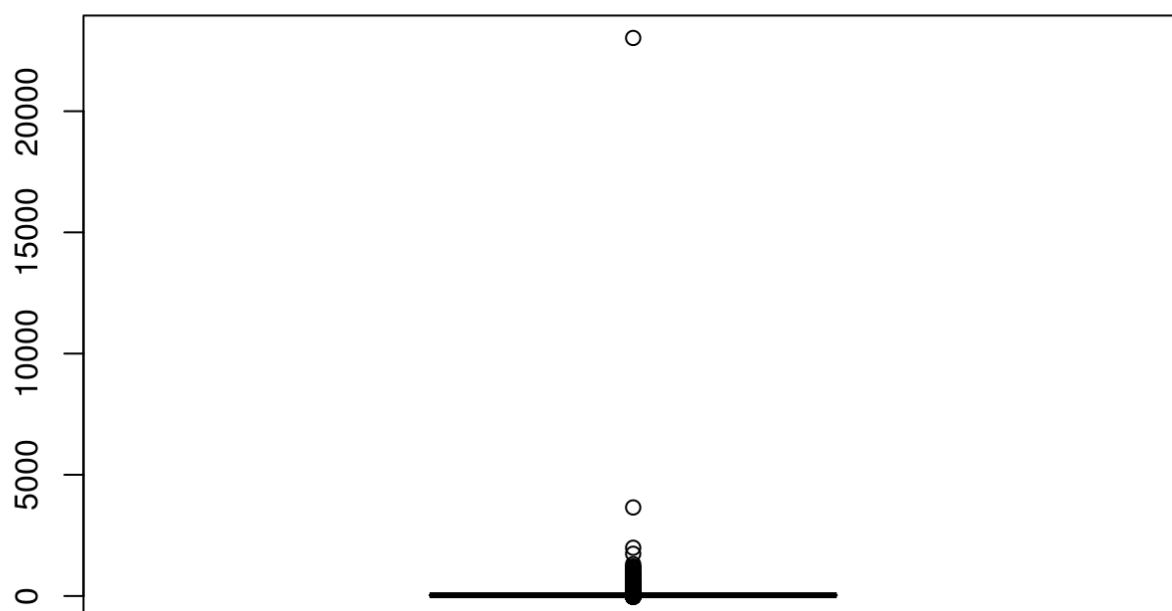
OUTLIERS at SD = 1.5 :
Upper limit: 39.5
Number of upper outliers: 755 0.02 %
Lower limit: 19.5
Number of upper outliers: 755 0.02 %

```

Fresh_Foods



Fresh_Foods



```
$Fresh_Foods  
[1] "integer"
```

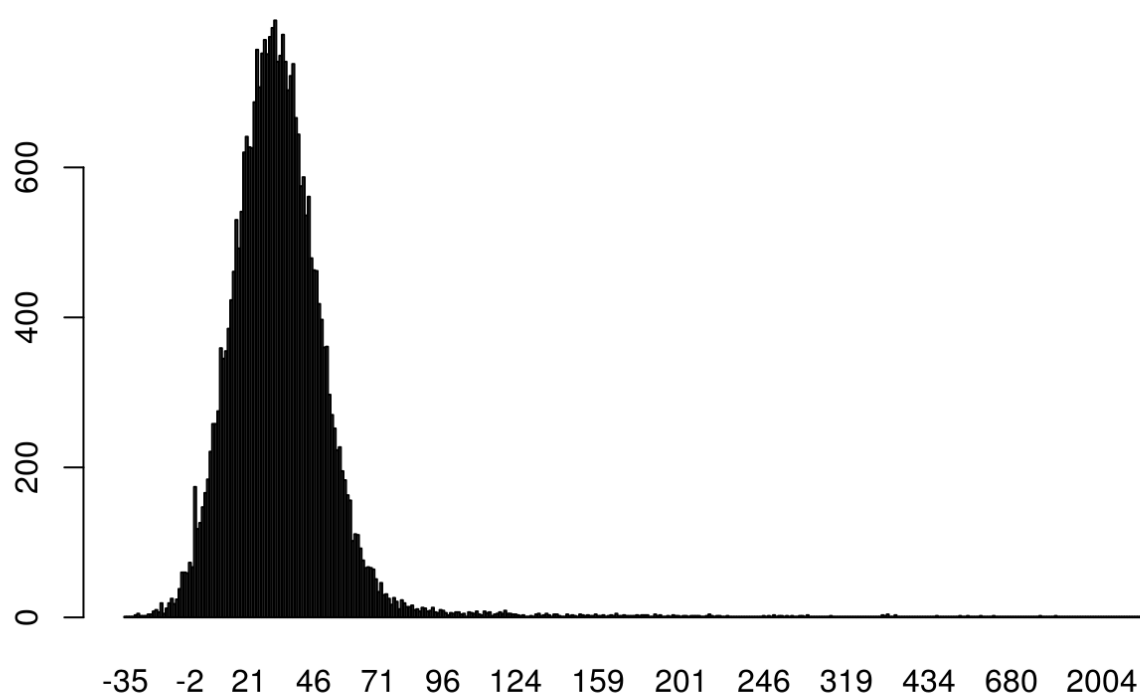
```
Min      : -33  
Max      : 23023  
Range    : -33 23023  
Sum      : 1124788  
Median   : 32  
Mean     : 36.21689  
Variance : 18944.28  
Skewness : 150.985  
Kurtosis : 25070.02
```

```
Observations : 31057  
Unique values : 340  
Missing values : 0 0 %  
Zero values   : 192 0.6 %  
Neg. values   : 453 1.5 %
```

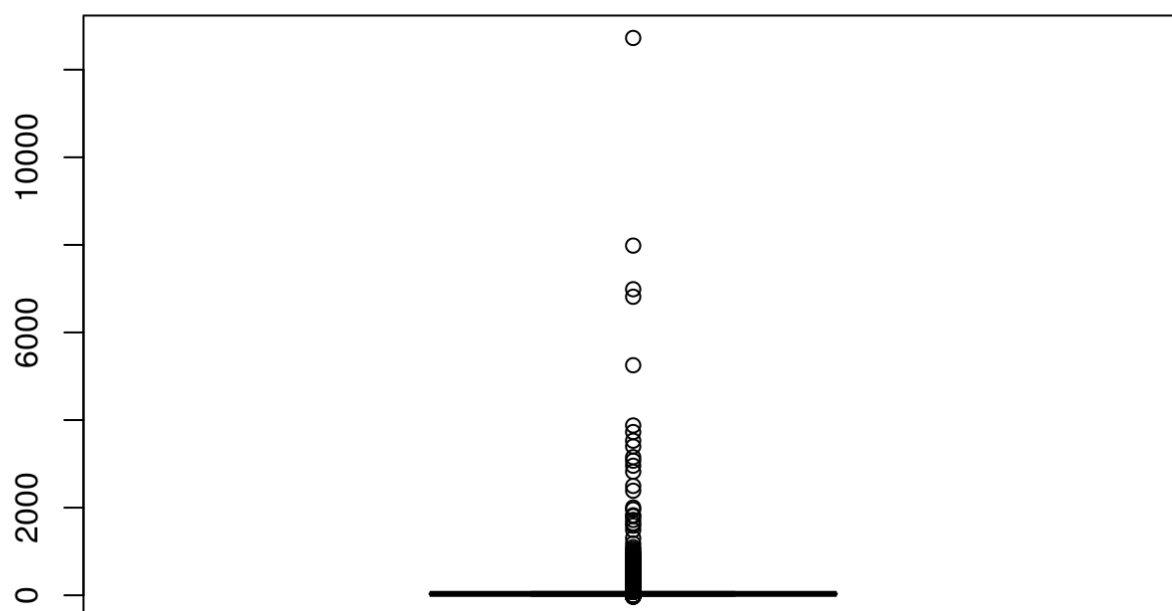
```
1Q      : -33  
2Q      : 22  
3Q      : 32  
4Q      : 43  
5Q      : 23023
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 74.5  
Number of upper outliers: 841 0.03 %  
Lower limit: -9.5  
Number of upper outliers: 841 0.03 %
```

Frozen_Foods



Frozen_Foods



\$Frozen_Foods

[1] "integer"

Min : -35
Max : 12725
Range : -35 12725
Sum : 1172735
Median : 31
Mean : 37.76073
Variance : 16736.84
Skewness : 55.33701
Kurtosis : 4165.115

Observations : 31057
Unique values : 394
Missing values : 0 0 %
Zero values : 174 0.6 %
Neg. values : 530 1.7 %

1Q : -35
2Q : 21
3Q : 31
4Q : 43
5Q : 12725

OUTLIERS at SD = 1.5 :

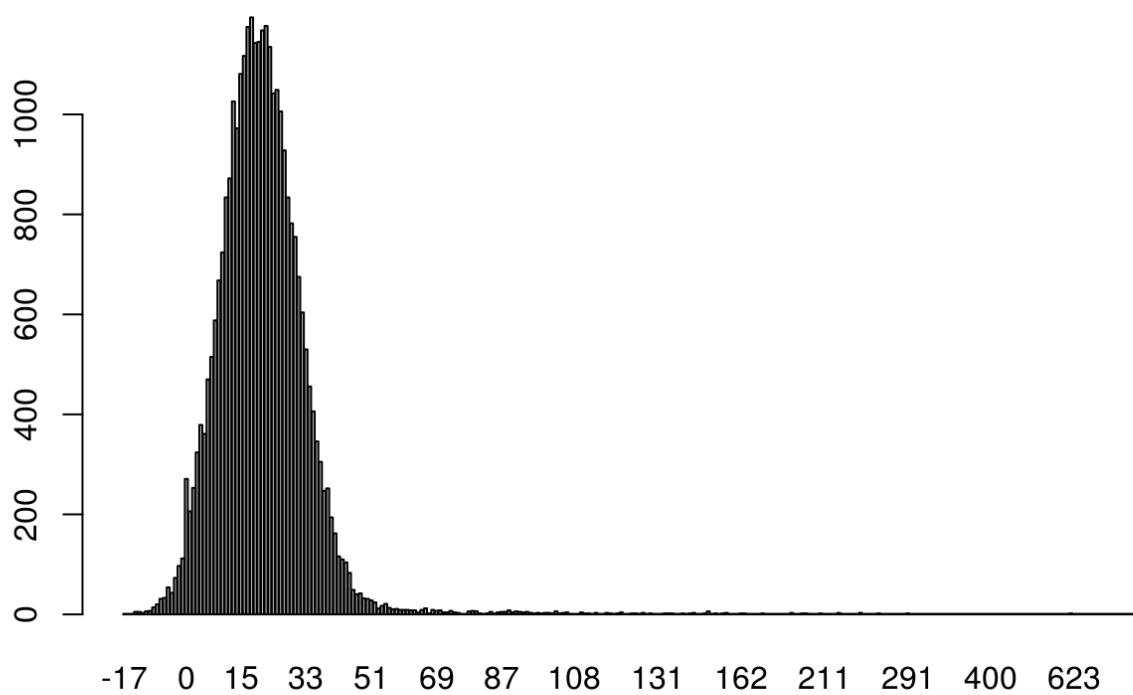
Upper limit: 76

Number of upper outliers: 781 0.03 %

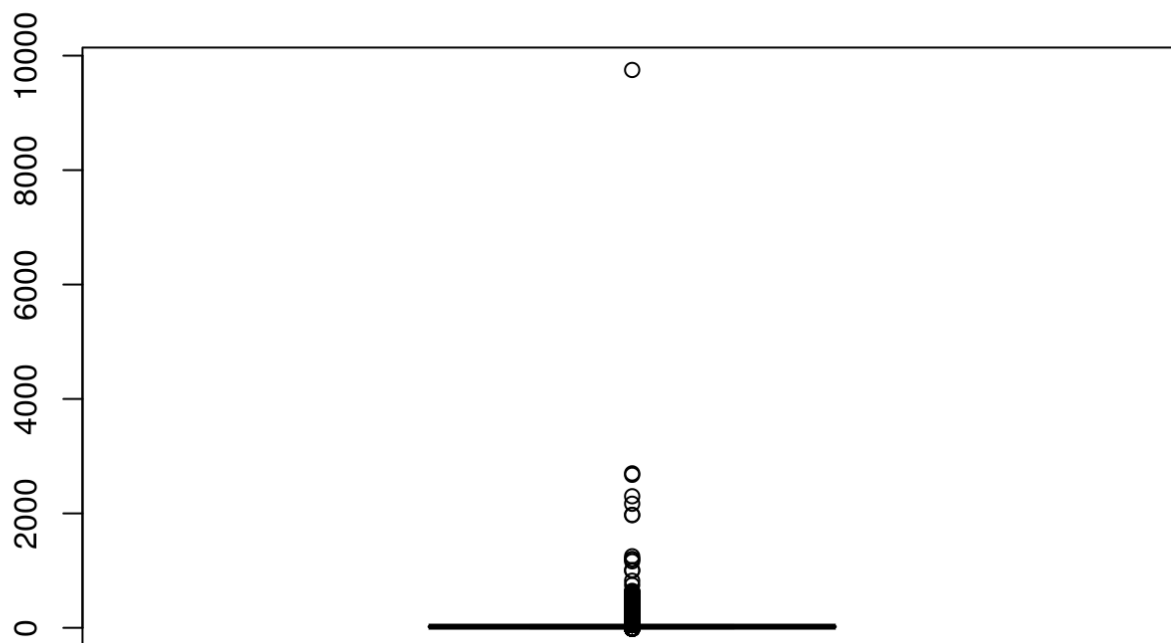
Lower limit: -12

Number of upper outliers: 781 0.03 %

Fruit_Beverages



Fruit_Beverages



\$Fruit_Beverages

[1] "integer"

Min : -17
Max : 9751
Range : -17 9751
Sum : 717142
Median : 20
Mean : 23.09115
Variance : 4894.755
Skewness : 94.91754
Kurtosis : 12292.15

Observations : 31057
Unique values : 281
Missing values : 0 0 %
Zero values : 271 0.9 %
Neg. values : 506 1.6 %

1Q : -17
2Q : 13
3Q : 20
4Q : 27
5Q : 9751

OUTLIERS at SD = 1.5 :

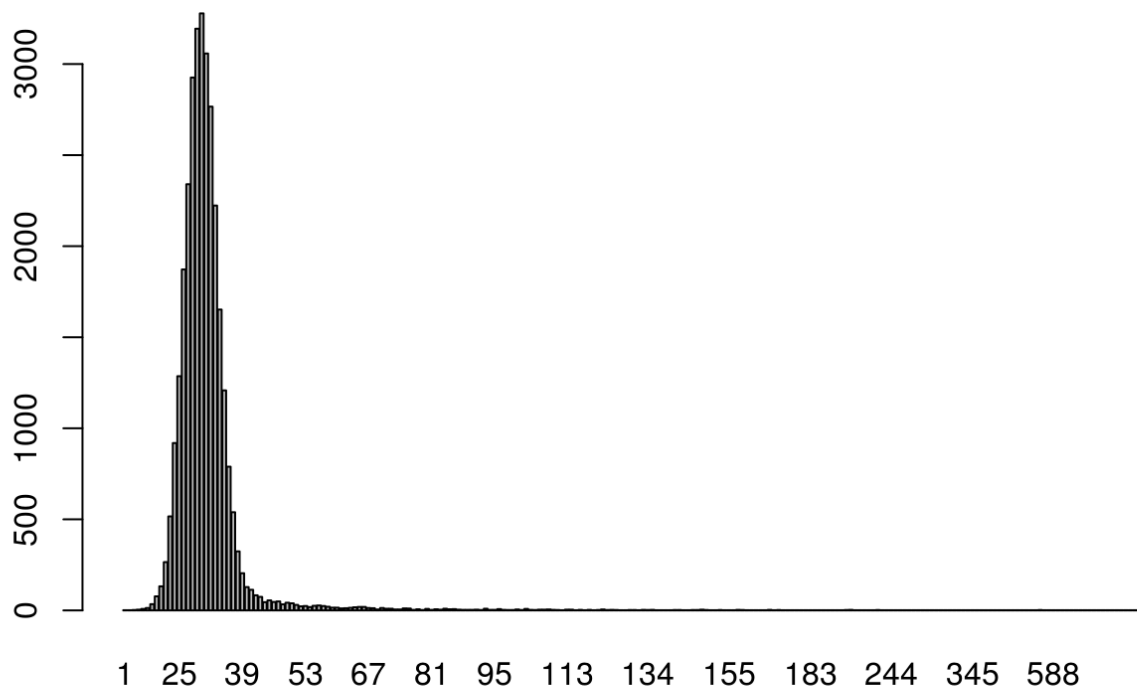
Upper limit: 48

Number of upper outliers: 636 0.02 %

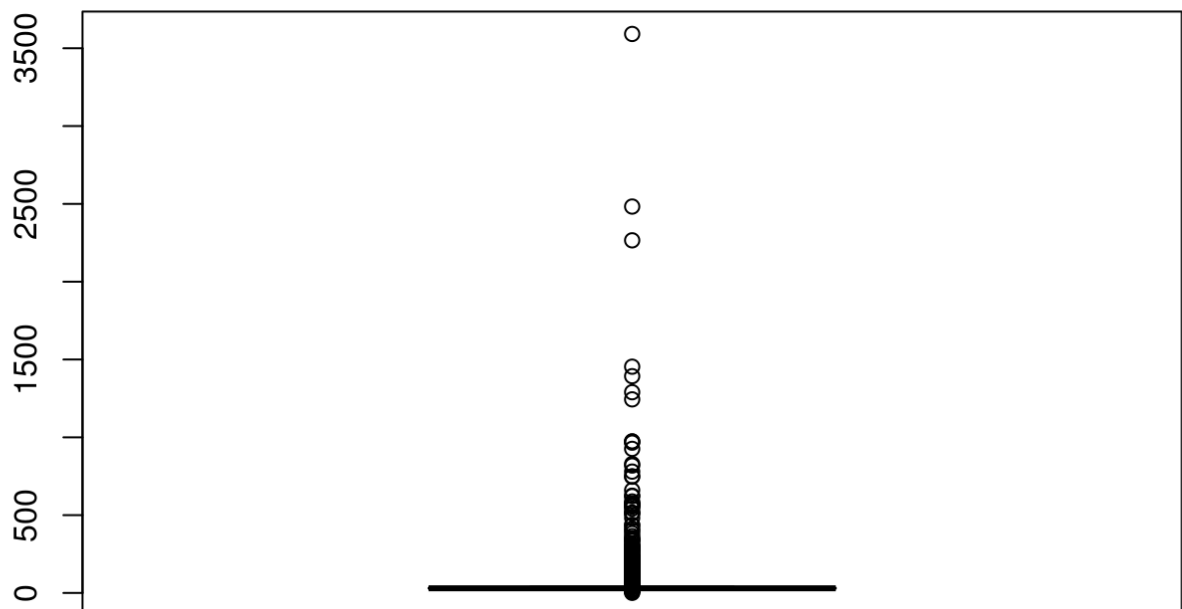
Lower limit: -8

Number of upper outliers: 636 0.02 %

Pastry



Pastry




```
$Pastry  
[1] "integer"
```

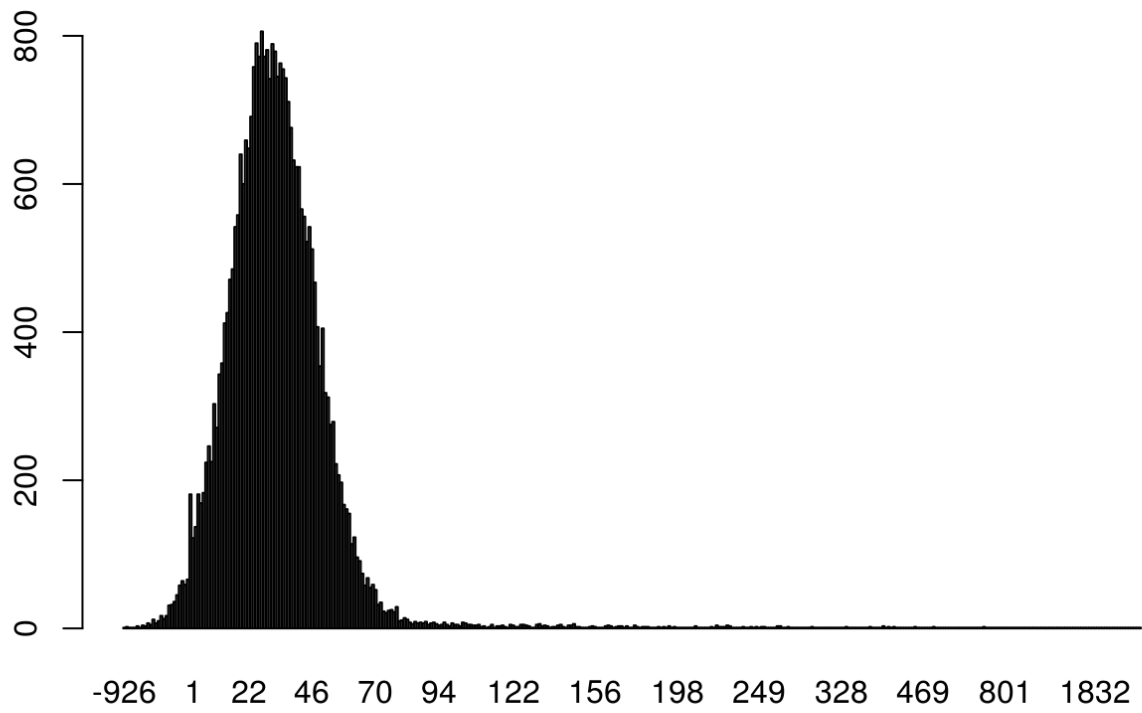
```
Min      : 1  
Max      : 3592  
Range    : 1 3592  
Sum      : 1010513  
Median   : 30  
Mean     : 32.53737  
Variance : 1505.973  
Skewness : 48.89765  
Kurtosis : 3403.751
```

```
Observations : 31057  
Unique values : 226  
Missing values : 0 0 %  
Zero values : 0 0 %  
Neg. values : 0 0 %
```

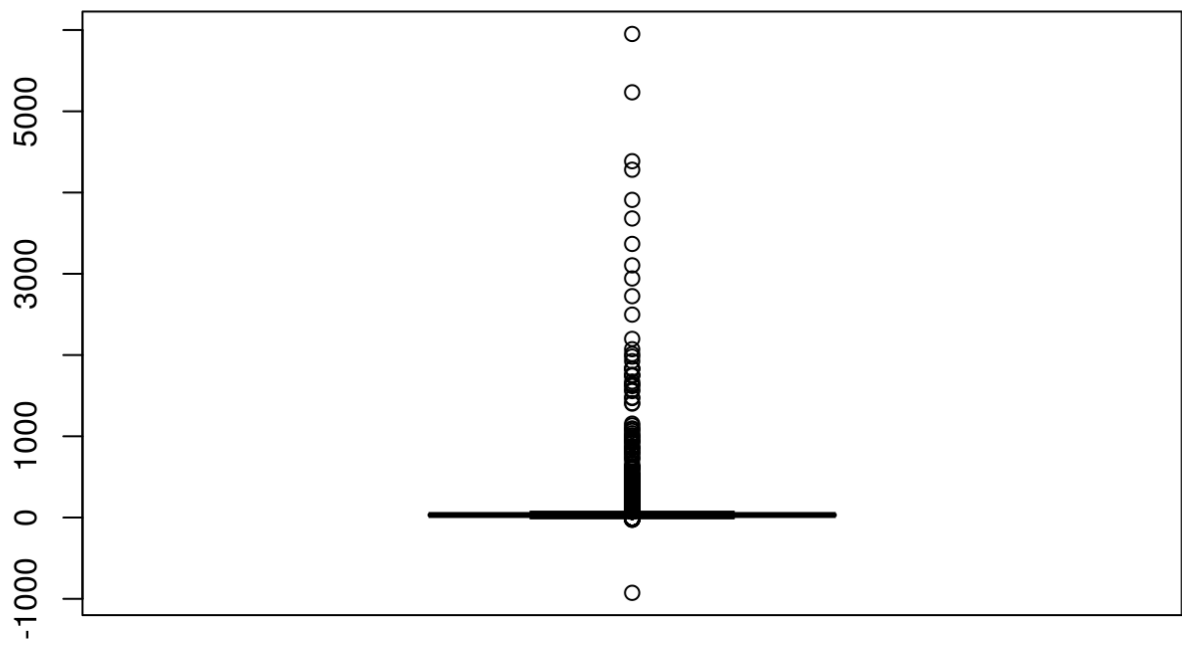
```
1Q      : 1  
2Q      : 28  
3Q      : 30  
4Q      : 33  
5Q      : 3592
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 40.5  
Number of upper outliers: 1298 0.04 %  
Lower limit: 20.5  
Number of upper outliers: 1298 0.04 %
```

Sodas



Sodas



```

$Sodas
[1] "integer"

Min      : -926
Max      : 5952
Range    : -926 5952
Sum      : 1146306
Median   : 31
Mean     : 36.90975
Variance : 9000.163
Skewness : 32.7851
Kurtosis : 1439.859

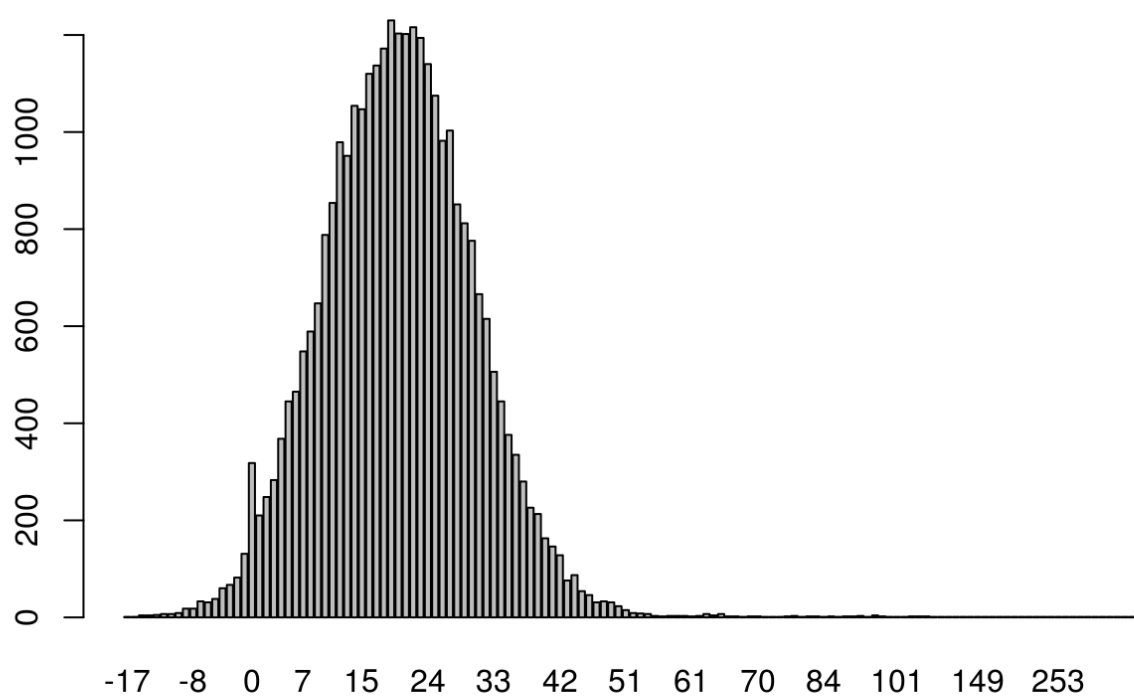
Observations : 31057
Unique values : 385
Missing values : 0 0 %
Zero values   : 181 0.6 %
Neg. values   : 496 1.6 %

1Q      : -926
2Q      : 21
3Q      : 31
4Q      : 42
5Q      : 5952

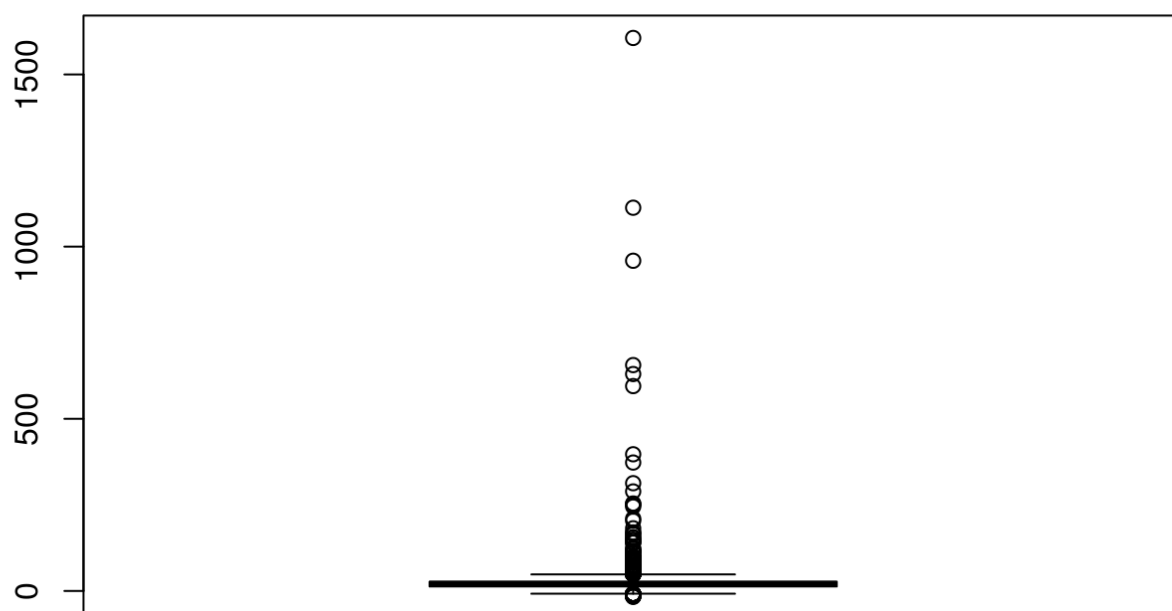
OUTLIERS at SD = 1.5 :
Upper limit: 73.5
Number of upper outliers: 722 0.02 %
Lower limit: -10.5
Number of upper outliers: 722 0.02 %

```

Toiletries



Toiletries



```
$Toiletries  
[1] "integer"
```

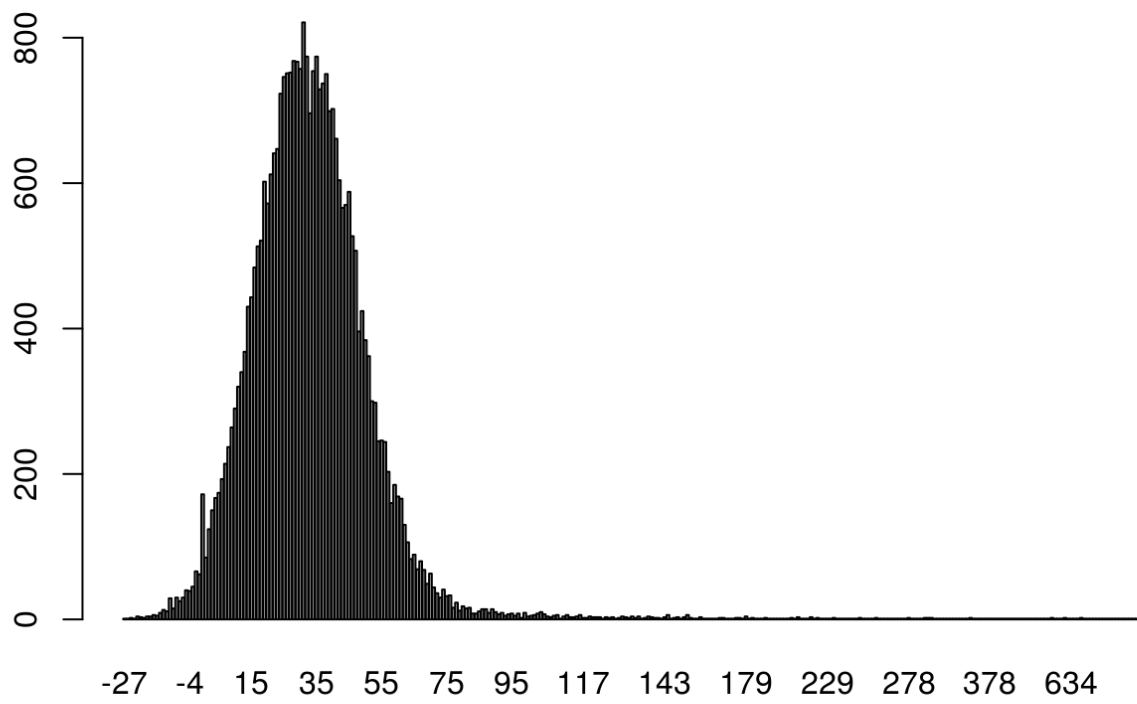
```
Min      : -17  
Max      : 1606  
Range    : -17 1606  
Sum      : 633623  
Median   : 20  
Mean     : 20.40194  
Variance : 323.9255  
Skewness : 38.88878  
Kurtosis : 2762.147
```

```
Observations : 31057  
Unique values : 139  
Missing values : 0 0 %  
Zero values   : 318 1 %  
Neg. values   : 516 1.7 %
```

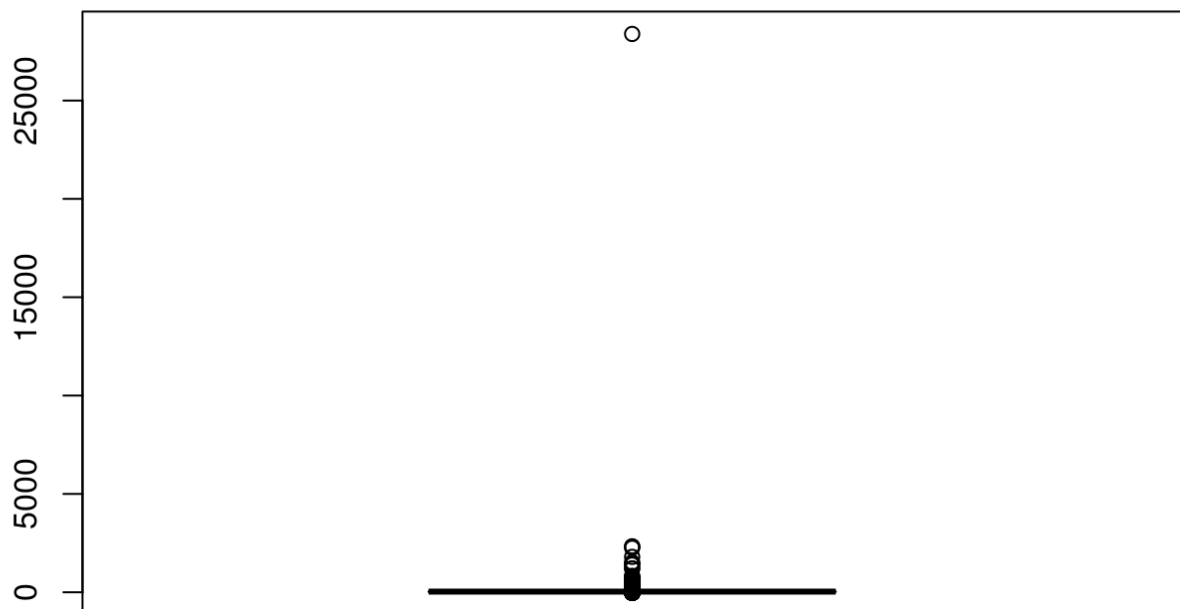
```
1Q      : -17  
2Q      : 13  
3Q      : 20  
4Q      : 27  
5Q      : 1606
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 48  
Number of upper outliers: 208 0.01 %  
Lower limit: -8  
Number of upper outliers: 208 0.01 %
```

Veggies



Veggies



```

$Veggies
[1] "integer"

Min      : -27
Max      : 28387
Range    : -27 28387
Sum      : 1108787
Median   : 32
Mean     : 35.70168
Variance : 27617.99
Skewness : 160.3038
Kurtosis : 27280.36

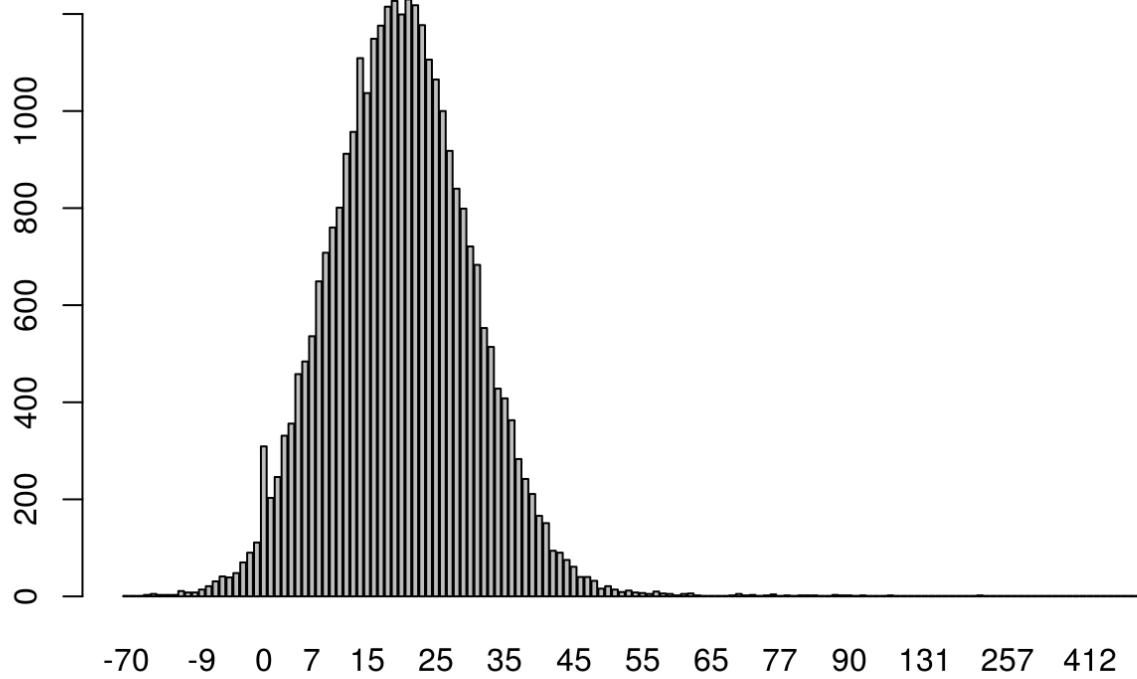
Observations : 31057
Unique values : 313
Missing values : 0 0 %
Zero values : 172 0.6 %
Neg. values : 447 1.4 %

1Q : -27
2Q : 22
3Q : 32
4Q : 43
5Q : 28387

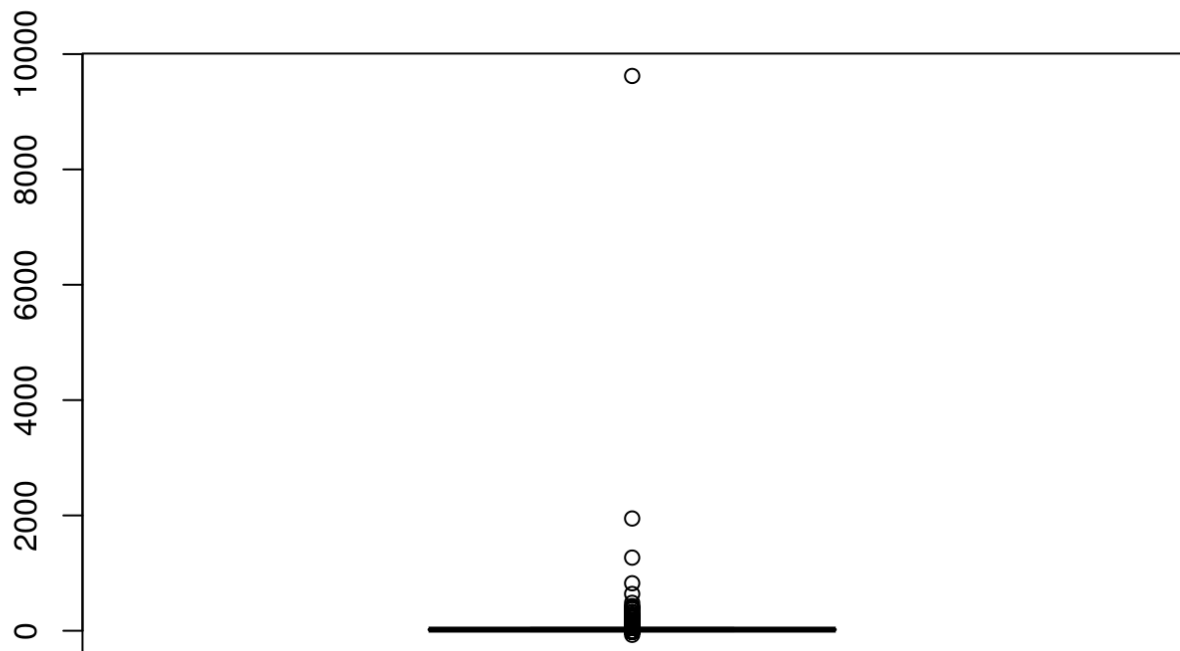
OUTLIERS at SD = 1.5 :
Upper limit: 74.5
Number of upper outliers: 654 0.02 %
Lower limit: -9.5
Number of upper outliers: 654 0.02 %

```

Winery



Winery




```
$Winery  
[1] "integer"
```

```
Min      : -70  
Max      : 9621  
Range    : -70 9621  
Sum      : 642638  
Median   : 20  
Mean     : 20.69221  
Variance : 3347.791  
Skewness : 148.8366  
Kurtosis : 24454.57
```

```
Observations : 31057  
Unique values : 148  
Missing values : 0 0 %  
Zero values   : 309 1 %  
Neg. values   : 512 1.6 %
```

```
1Q      : -70  
2Q      : 13  
3Q      : 20  
4Q      : 27  
5Q      : 9621
```

```
OUTLIERS at SD = 1.5 :  
Upper limit: 48  
Number of upper outliers: 215 0.01 %  
Lower limit: -8  
Number of upper outliers: 215 0.01 %
```