Telematics Package Examples

This document shows the usage scenarios for the Telematics package. Their are two entry points to using the package. * 1) If you do not have a Master Summary File created and you want to create One * 2) If you have a Master Summary File and you want to load it and do some analysis

Defining some variable

```
library(package = "niraj9.telematics")
public.folder = "/home/niraj9/public/"
master.file.3 = paste(public.folder , "master-3.csv" , sep = "")
master.file.4 = paste(public.folder , "master-4.csv" , sep = "")
```

Scenario 1 - Create a Master Summary File

```
telematics <- Telematics$new(master.file.4)
```

```
## [1] " Master Summary =  /home/niraj9/public/master-4.csv"
```

```
arun = telematics$CreateMasterSummary(file.list = "/home/niraj9/public/fileList.csv" ,
                                      root.folder = "/home/niraj9/public/drivers/",
                                      subset.driver.count = 30 ,
                                      cores =4)
```

```
## [1] "Processing... with cores= 4"
## [1] "Summary file created =  /home/niraj9/public/master-4.csv"
## [1] "row count= 5800"
## [1] "col count= 66"
```

Scenario 2 - Load an existing Master Summary File

```
## [1] " Master Summary =  /home/niraj9/public/master-3.csv"
```

```
## [1] "Master File is loaded"
```

Driver Analysis - Example 1 - Show Drivers loaded

```
telematics$drivers()
```

```
##  [1]  245  263  289  348 2440 2453 2549 2596 2643 2647 2684 2704 2741 2744
## [15] 2747 2751 2784 2902 3012 3141 3148 3224 3265 3300 3351 3381 3492 3544
## [29] 3587 3610
```

Load a Driver

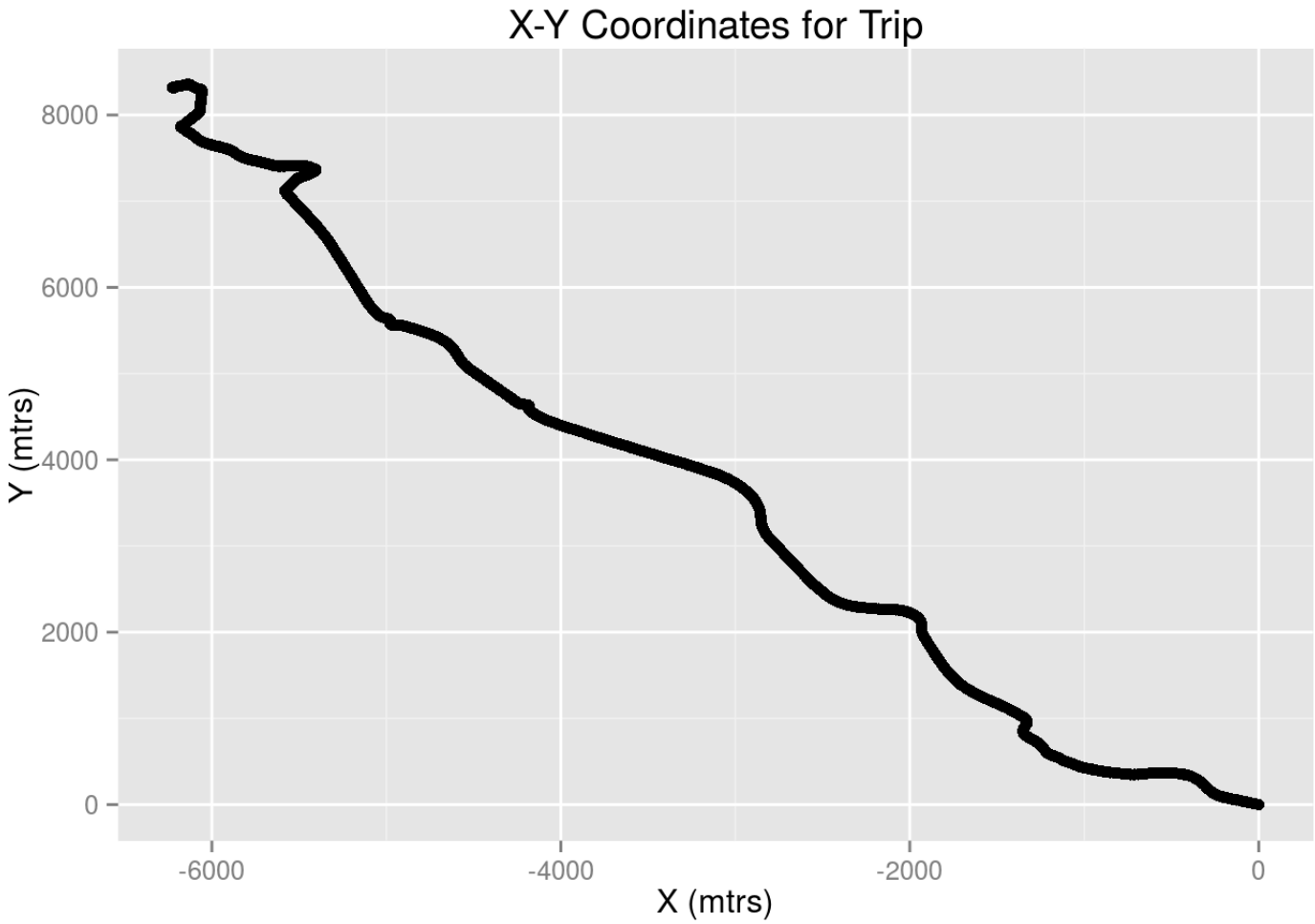
```
driver = Driver$new(db = telematics , driver.name = "2751")
driver$summary()
```

```
## [1] " trip count = 200"
## [1] " Driver Name/Num =  2751"
```

Driver Analysis - Example 2 - Show Driver Graphs

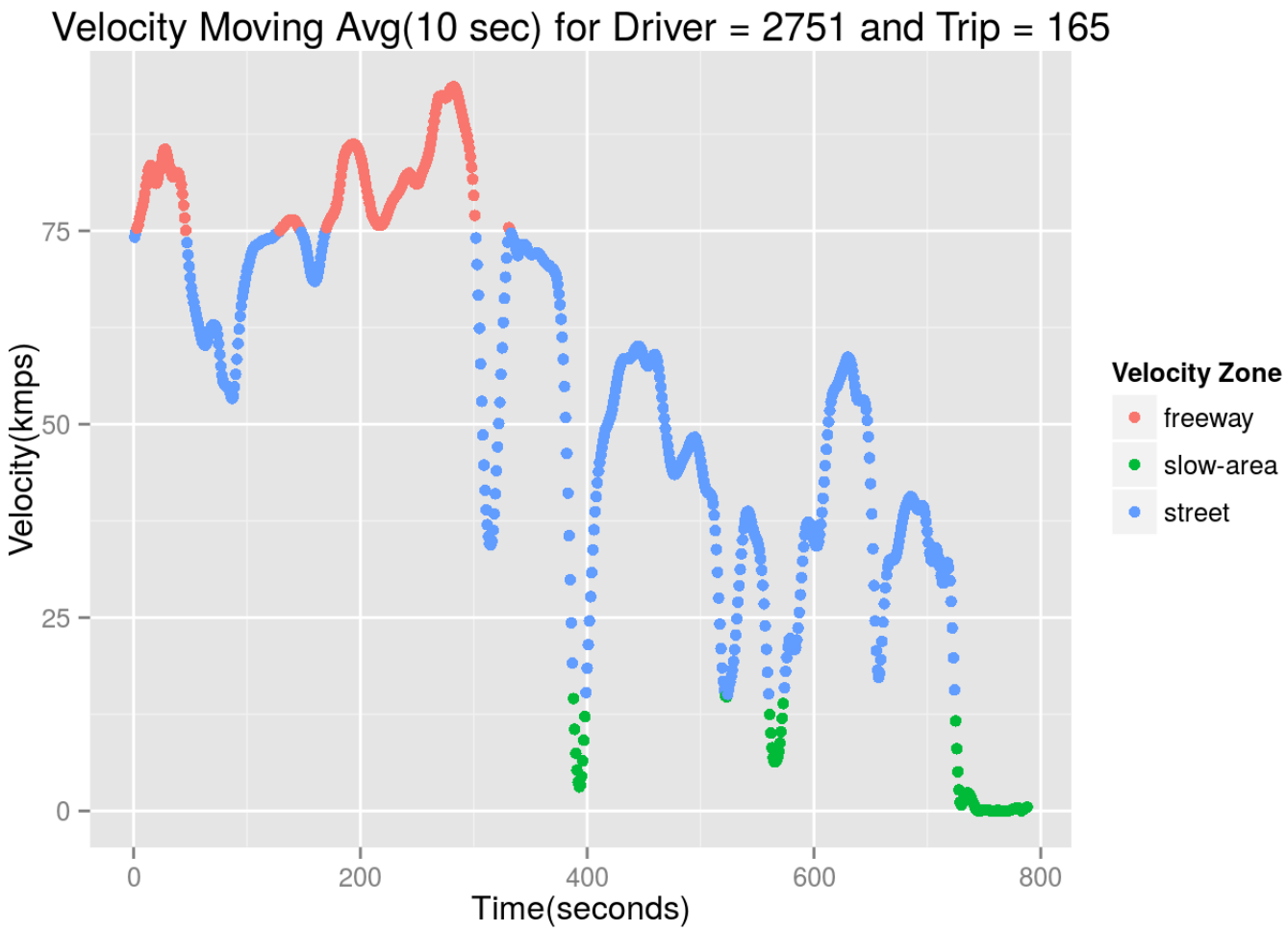
```
q =driver$ShowCoordinates(trip = 165)
```

```
## [1] 165
```



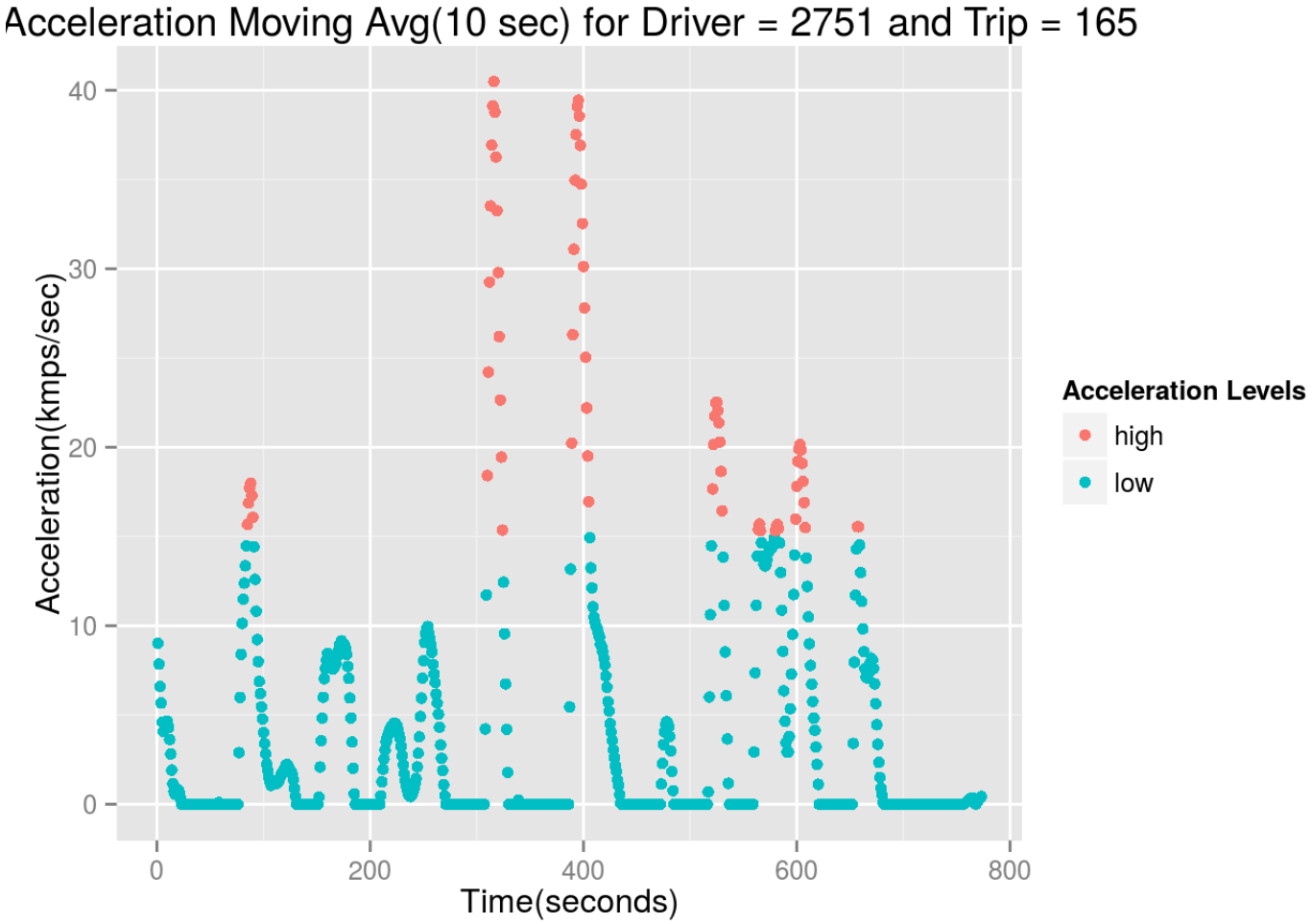

```
q =driver$ShowVelocity(trip = 165)
```

```
## [1] 165
```



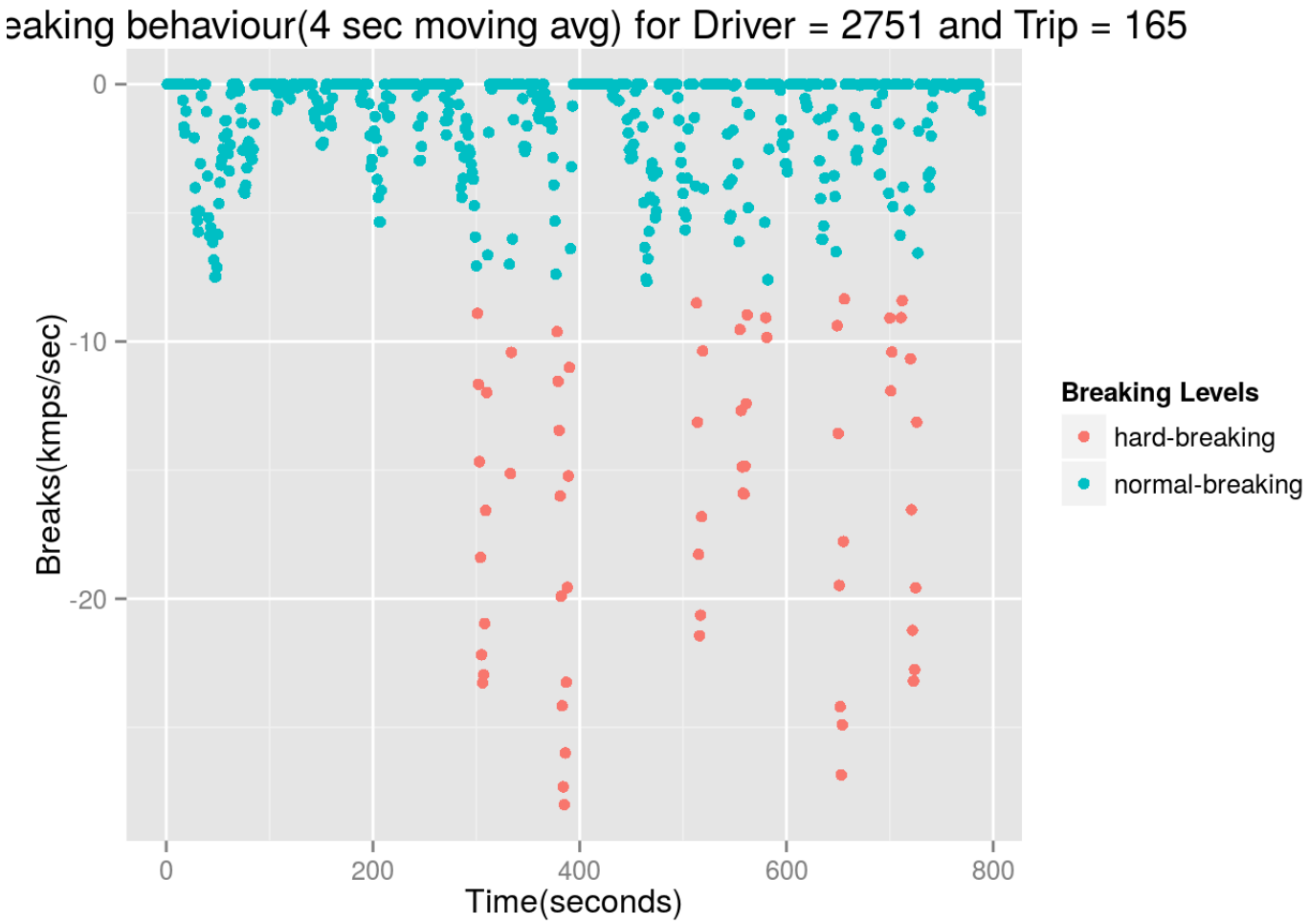

```
q =driver$ShowAcceleration(trip = 165)
```

```
## [1] 165
```



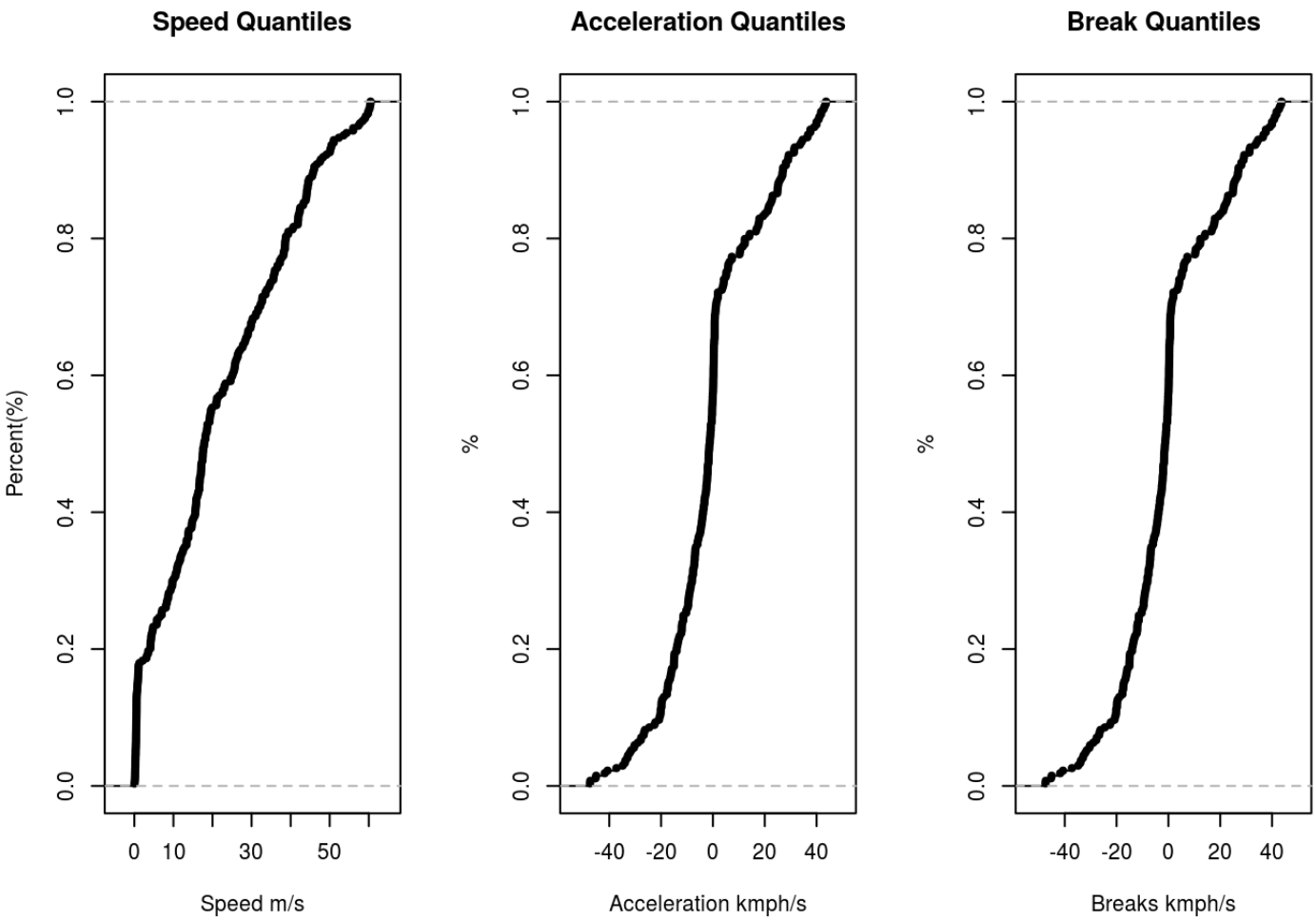

```
q =driver$ShowBreaks(trip = 165)
```

```
## [1] 165
```



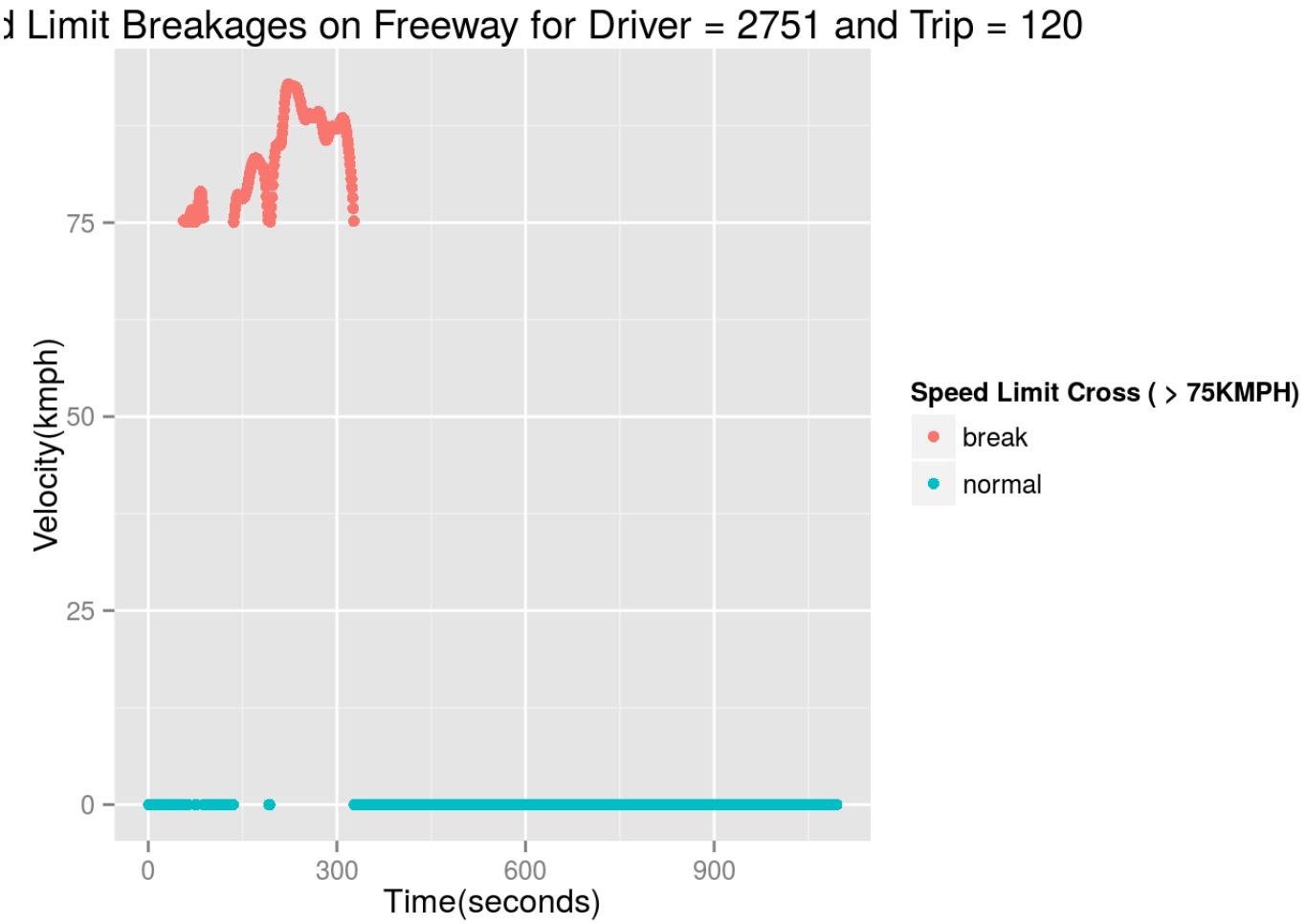

```
q=driver$ShowQuantiles(trip = 111)
```

```
## [1] 111
```




```
q=driver$ShowSpeedBreaks(trip = 120)
```

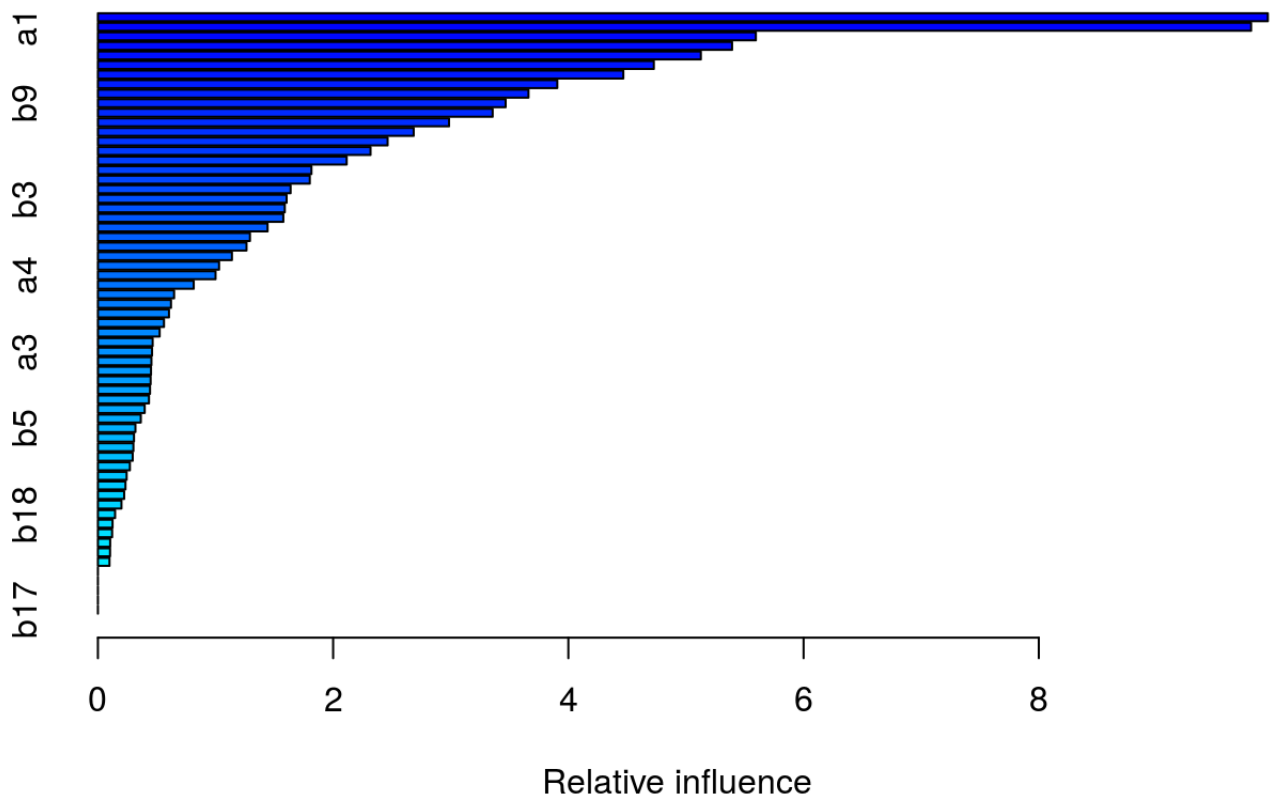
```
## [1] 120
```



Driver Analysis - Example 3 - Driver Signature Predictive Model

Create a Unique Driver Signature. i.e a GBM Model that can identify a driver

```
model = driver$CreateDriverSignature()
summary(model)
```




```
##           var    rel.inf
## v18       v18 9.94733837
## a1         a1 9.80507317
## v15       v15 5.59411053
## dis       dis 5.39207183
## v17       v17 5.12658450
## v16       v16 4.72686096
## a9         a9 4.46735035
## b19       b19 3.90593212
## v5         v5 3.66095148
## b9         b9 3.46680518
## vecDis vecDis 3.35616034
## a20       a20 2.98542153
## b20       b20 2.68478647
## v13       v13 2.46325146
## v4         v4 2.31790788
## v11       v11 2.11514852
## a8         a8 1.81554908
## a7         a7 1.80150174
## v14       v14 1.63828376
## b3         b3 1.60439867
## a10       a10 1.58876583
```

```
## b2         b2 1.57652154
## v12       v12 1.44267613
## v20       v20 1.29284827
## a11       a11 1.26349558
## v19       v19 1.13957260
## b1         b1 1.03019412
## a4         a4 1.00021543
## a19       a19 0.81452160
## v1         v1 0.64783247
## b8         b8 0.62149323
## b7         b7 0.60429795
## b13       b13 0.56175405
## time     time 0.52492277
## b10       b10 0.46544066
## a3         a3 0.46037915
## b11       b11 0.45496117
## v8         v8 0.45149714
## b6         b6 0.44819231
## v6         v6 0.44313730
## v2         v2 0.43415879
## a14       a14 0.39776718
## b4         b4 0.36482425
## b5         b5 0.31894215
## a17       a17 0.30671508
## v9         v9 0.30181281
## a2         a2 0.29563785
## b14       b14 0.27184760
## b16       b16 0.24435949
## v10       v10 0.23444004
## v3         v3 0.22325496
## a6         a6 0.20026542
## b18       b18 0.14601833
## a15       a15 0.12449251
## a12       a12 0.12098907
## a18       a18 0.10431429
## a13       a13 0.10338228
## v7         v7 0.09857065
## a5         a5 0.00000000
## a16       a16 0.00000000
## b12       b12 0.00000000
## b15       b15 0.00000000
## b17       b17 0.00000000
```

Driver Analysis - Example 4 - Driver Class Predictive Model

Use the Telematics class to segment the drivers into 5 driver classes

```
fit <- telematics$SegmentDrivers(segments = 5)
```

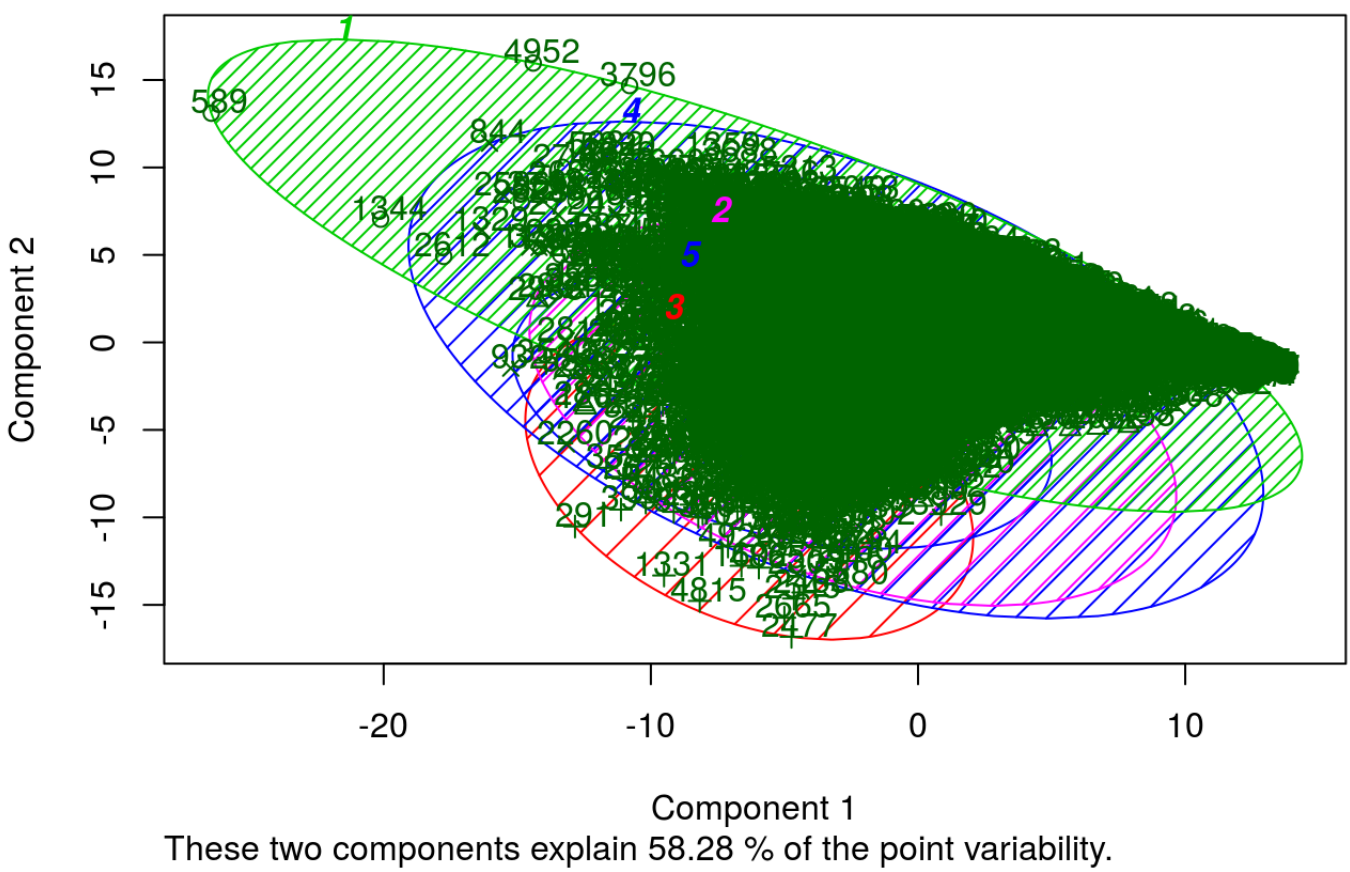
```
##              Length Class  Mode
## cluster      6000   -none- numeric
## centers       315   -none- numeric
## totss           1   -none- numeric
## withinss        5   -none- numeric
## tot.withinss    1   -none- numeric
## betweenss       1   -none- numeric
## size            5   -none- numeric
## iter            1   -none- numeric
## ifault          1   -none- numeric
```

```
summary(fit)
```

```
##              Length Class  Mode
## cluster      6000   -none- numeric
## centers       315   -none- numeric
## totss           1   -none- numeric
## withinss        5   -none- numeric
## tot.withinss    1   -none- numeric
## betweenss       1   -none- numeric
## size            5   -none- numeric
## iter            1   -none- numeric
## ifault          1   -none- numeric
```

Visualize the Driver Clusters

```
telematics$VisualizeSegments()
```


Cluster Plot against 1&2 principal components
Component 2
Component 1
These two components explain 58.28 % of the point variability.
-20
-10
0
10
15
10
5
0
-5
-10
-15
1
2
3
4
5
589
4952
3796
844
1344
2612
2260
291
4815
2477

```
## [1] TRUE
```