

# F1- JB 2010 Australian GP Analysis

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```
require(ggplot2)
```

```
## Loading required package: ggplot2
```

```
require(RCurl)
```

```
## Loading required package: RCurl
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```
## Loading required package: bitops
```

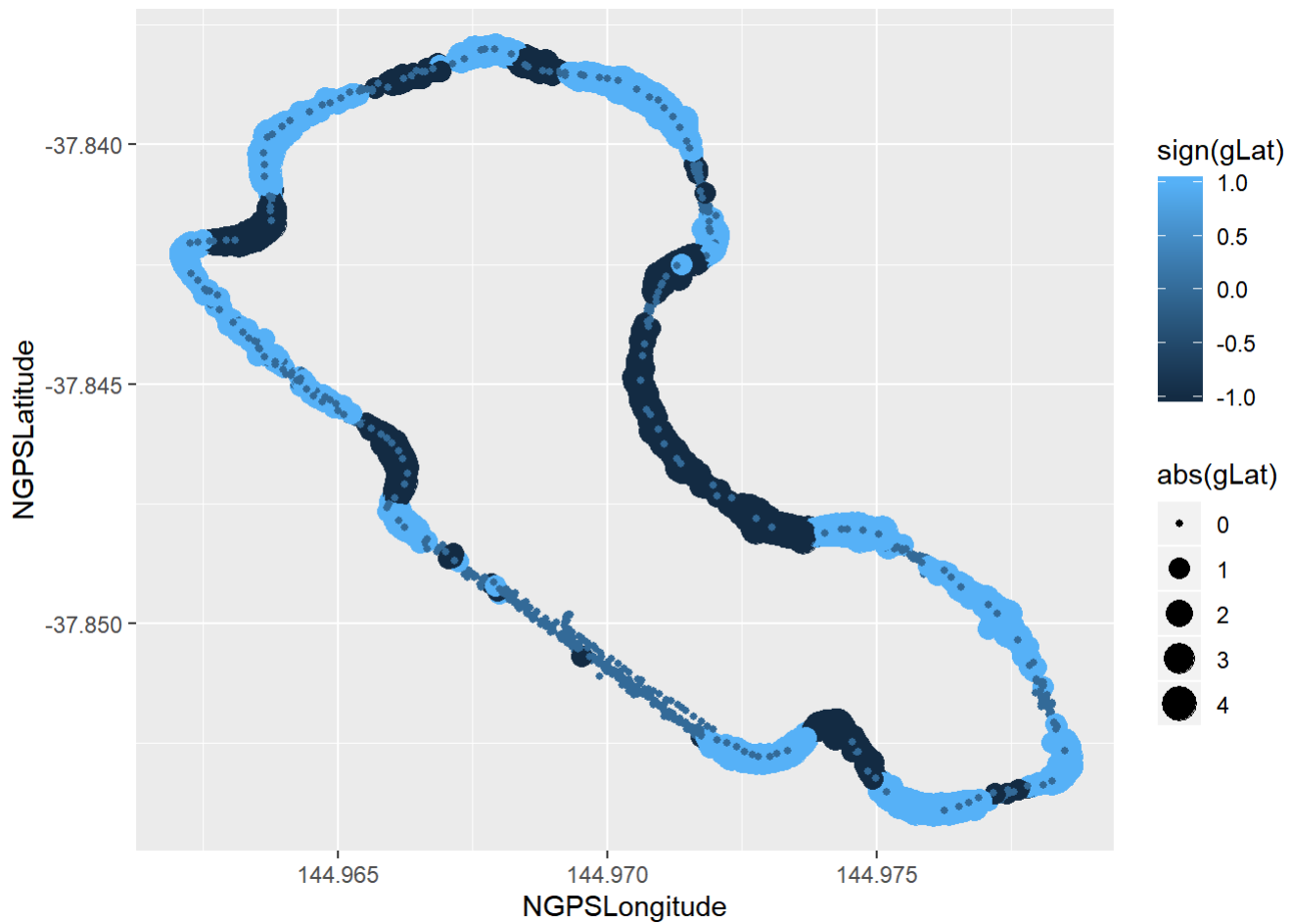
```
df <- read.csv(file="D:/KTM project/F1/F1 2010 - JB McLaren Telemetry, Australia.csv", header=TRUE, sep=",")
```

```
#Sanity check - preview the imported data  
head(df)
```

```
##           file timestamp NGPSLatitude NGPSLongitude NGear nEngine  
## 1 1269758114 17:35:10    -37.84828      144.9667      4   13422  
## 2 1269758115 17:35:11    -37.84788      144.9662      3   13383  
## 3 1269758116 17:35:12    -37.84762      144.9660      3   14145  
## 4 1269758117 17:35:13    -37.84718      144.9662      3   14584  
## 5 1269758118 17:35:14    -37.84683      144.9662      4   16929  
## 6 1269758119 17:35:15    -37.84625      144.9659      5   16273  
##   rThrottlePedal pBrakeF gLat gLong sLap  vCar Lap           lat.lng  
## 1              0     56   0   -2  299 217.9   1 -37.84828,144.96674  
## 2              10      1   2    0  352 149.0   1 -37.84788,144.96623  
## 3              55      1   1    0  397 139.2   1 -37.84762,144.96603  
## 4              99      1  -2    1  447 166.0   1 -37.84718,144.96616  
## 5             100      1  -2    1  486 193.3   1 -37.84683,144.96617  
## 6             100      1  -2    1  553 219.4   1 -37.84625,144.96587  
##           latlng  
## 1 -37.84828:144.96674  
## 2 -37.84788:144.96623  
## 3 -37.84762:144.96603  
## 4 -37.84718:144.96616  
## 5 -37.84683:144.96617  
## 6 -37.84625:144.96587
```

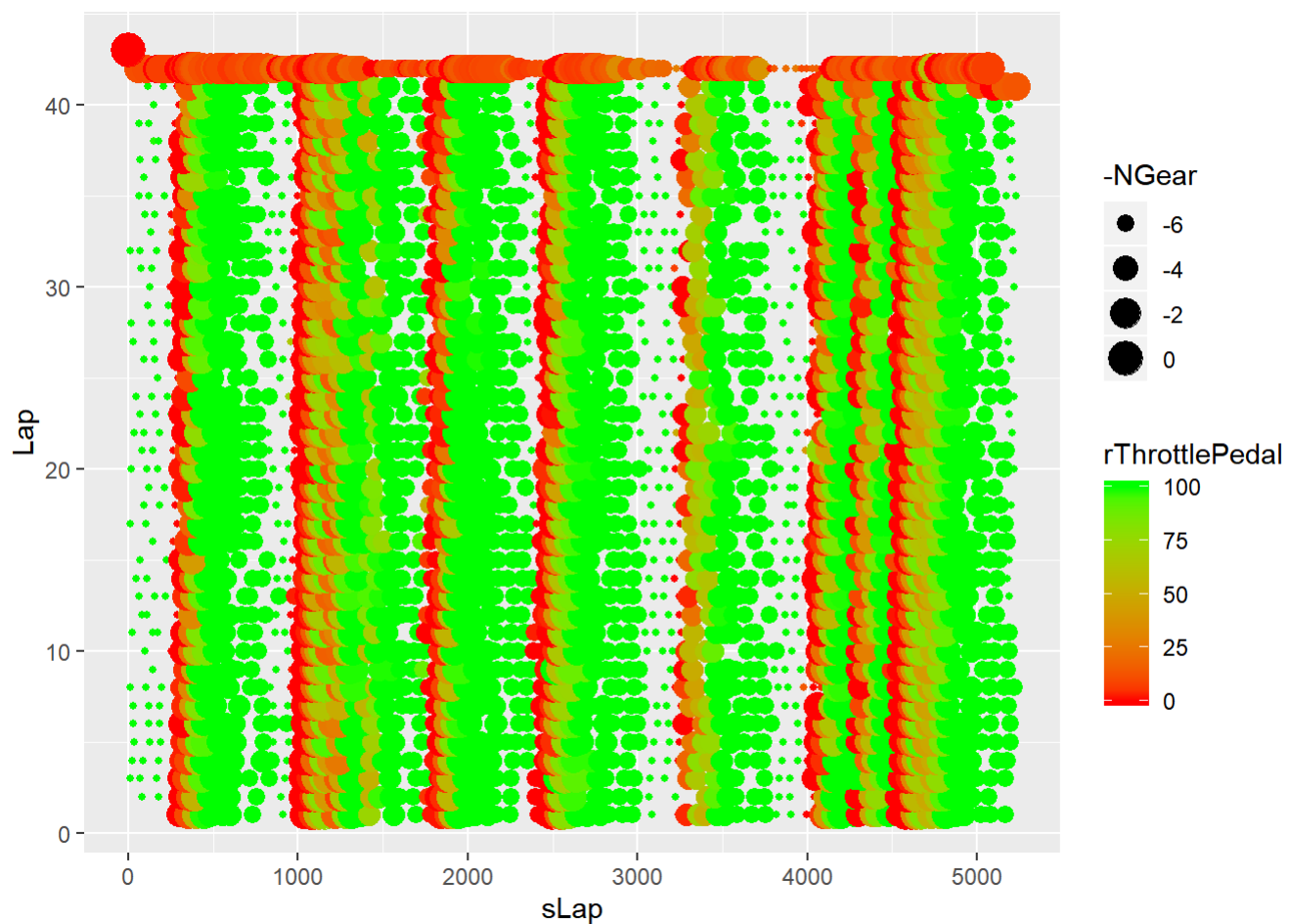
*#Example circuit map - sort of - showing the gLat (latitudinal 'g-force') values around the circuit (point size is absolute value of gLat, colour has two values, one for + and one for - values (swing to left and swing to right)).*

```
g=ggplot(df) + geom_point(aes(x=NGPSLongitude,y=NGPSLatitude,col=sign(gLat),size=abs(gLat)))
print(g)
```



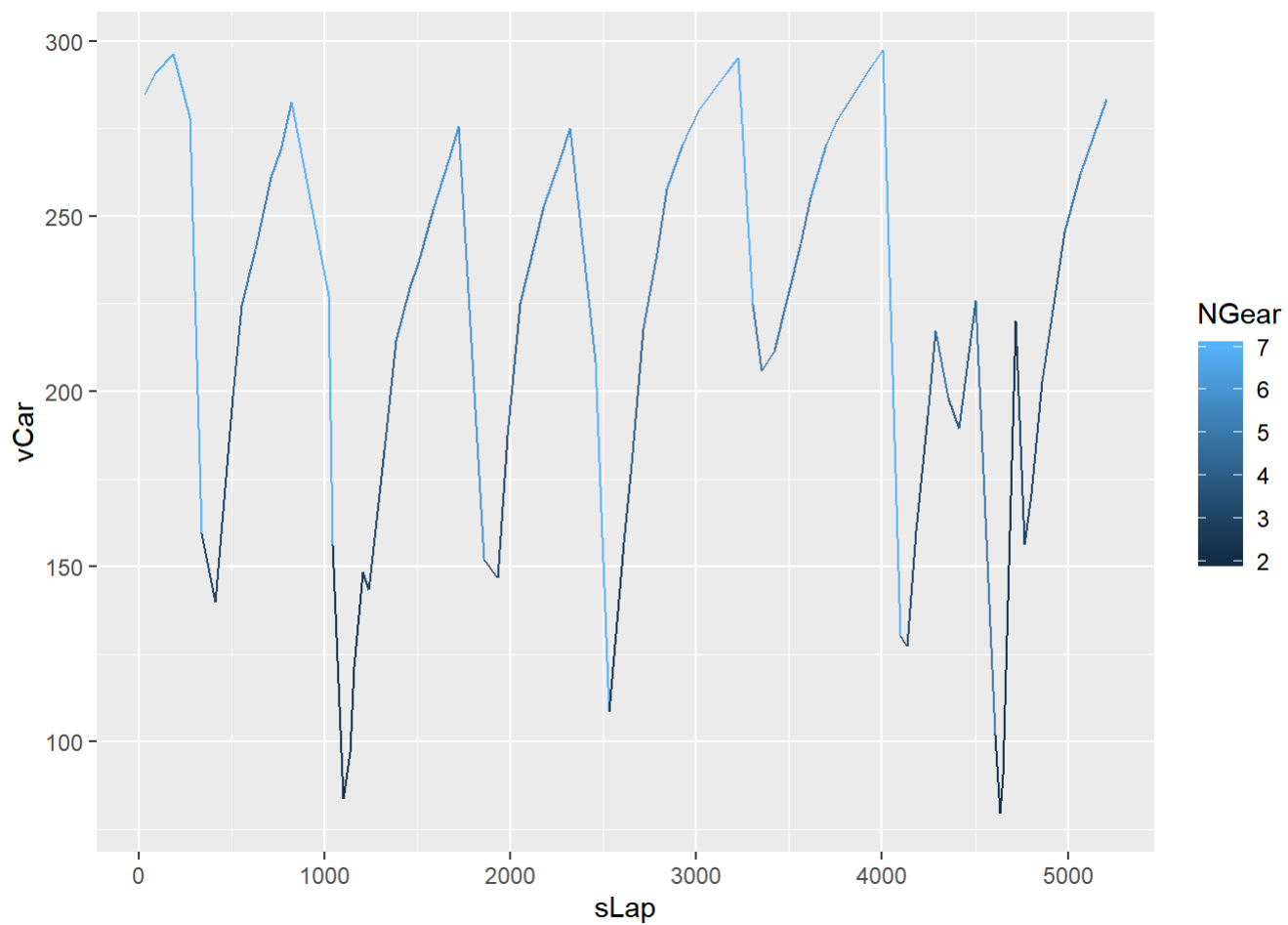
*#Example "driver DNA" trace, showing low gear throttle usage (distance round track on x-axis, lap number on y axis, node size is inversely proportional to gear number (low gear, large point size), colour relative to throttlepedal depression*

```
g=ggplot(df) + geom_point(aes(x=sLap,y=Lap,col=rThrottlePedal,size=-NGear)) + scale_colour_gradient(low='red',high='green')
print(g)
```

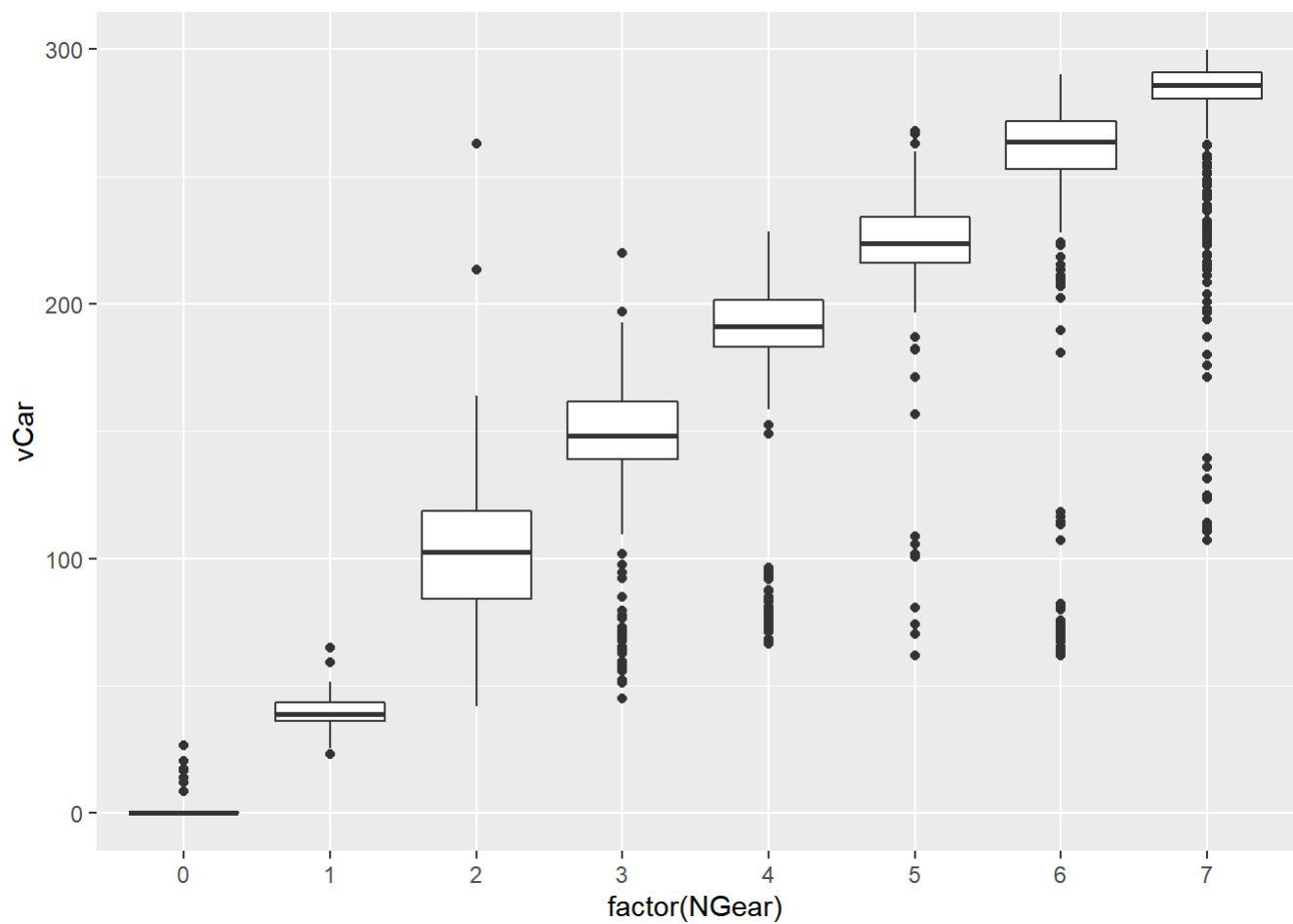


*#The previous plot shows how consistent Jenson was throughout the race*

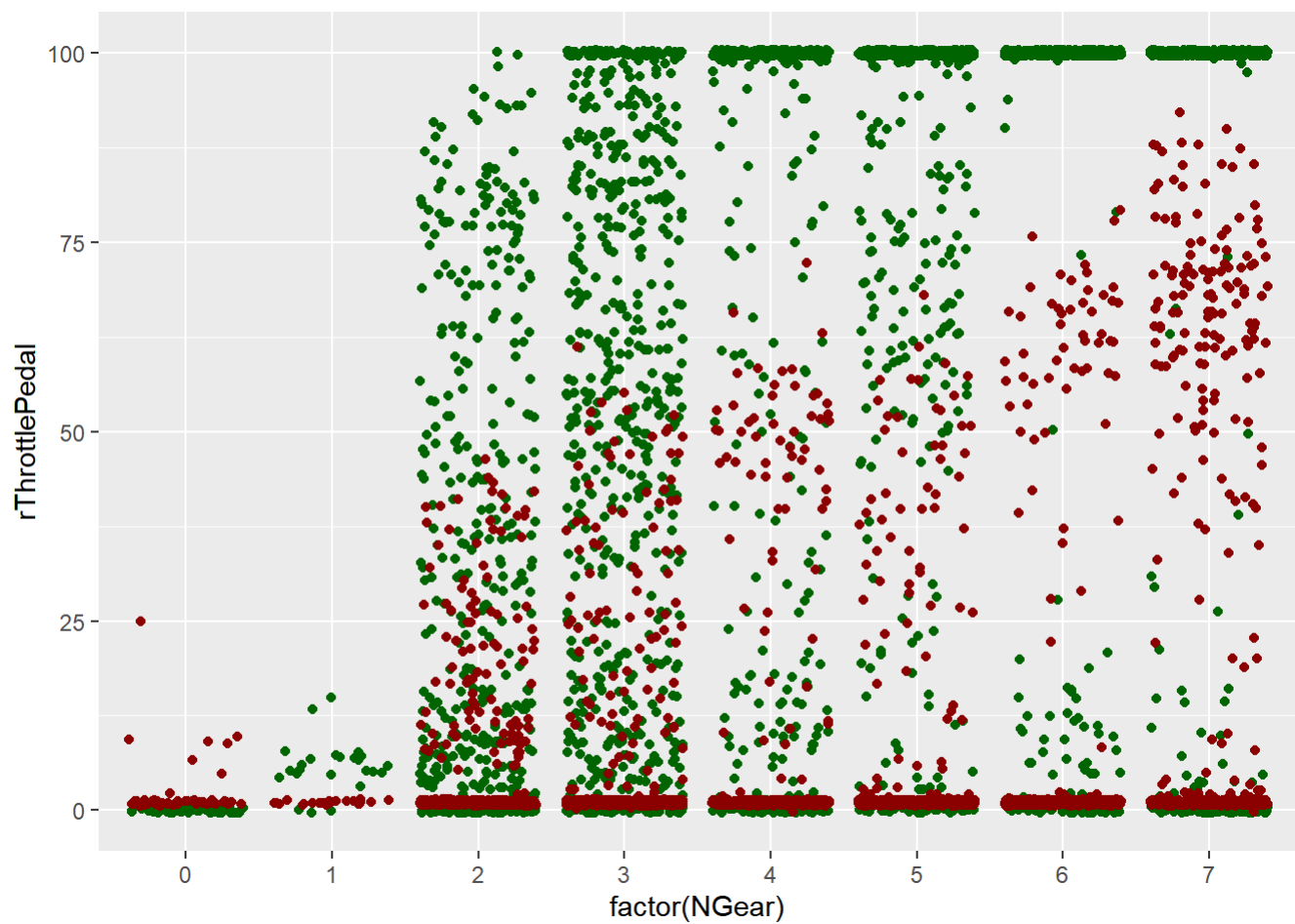
*#We can also show a trace for a single lap, such as speed coloured by gear*  
`g=ggplot(subset(df,Lap==22)) + geom_line(aes(x=sLap,y=vCar,colour=NGear))`  
`print(g)`



```
#We can also do statistical graphics - like a boxplot showing the distribution of speed values b  
y gear  
g = ggplot(df) + geom_boxplot(aes(factor(NGear),vCar))  
print(g)
```



```
#Footwork - brake and throttle pedal depression based on gear  
g = ggplot(df) + geom_jitter(aes(factor(NGear),rThrottlePedal),colour='darkgreen') + geom_jitter  
(aes(factor(NGear),pBrakeF),colour='darkred')  
print(g)
```

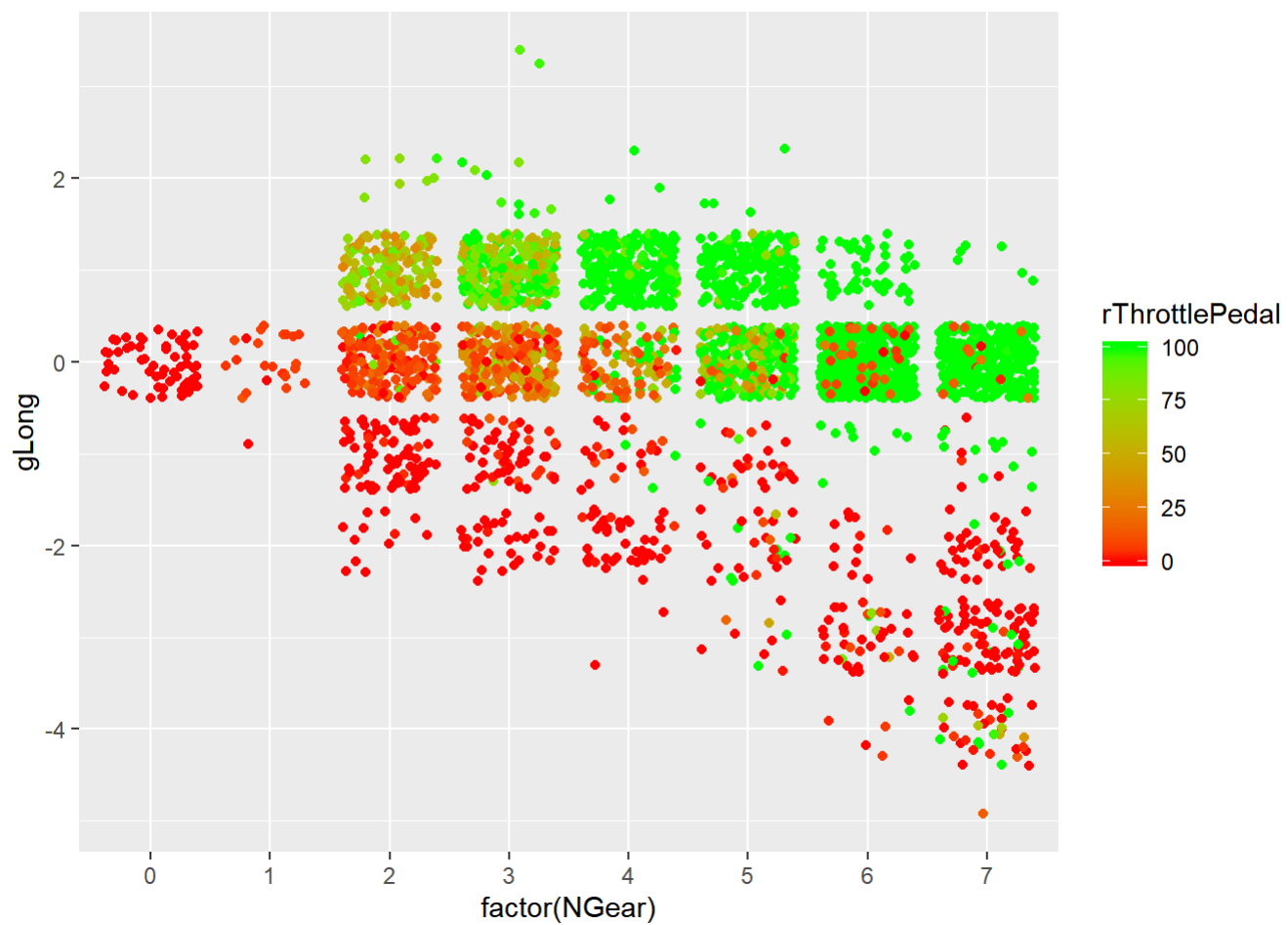


```
#Forces on the driver
#gLong by brake and gear
g = ggplot(df) + geom_jitter(aes(factor(NGear),gLong,col=pBrakeF)) + scale_colour_gradient(low=
'red',high='green')
print(g)
```



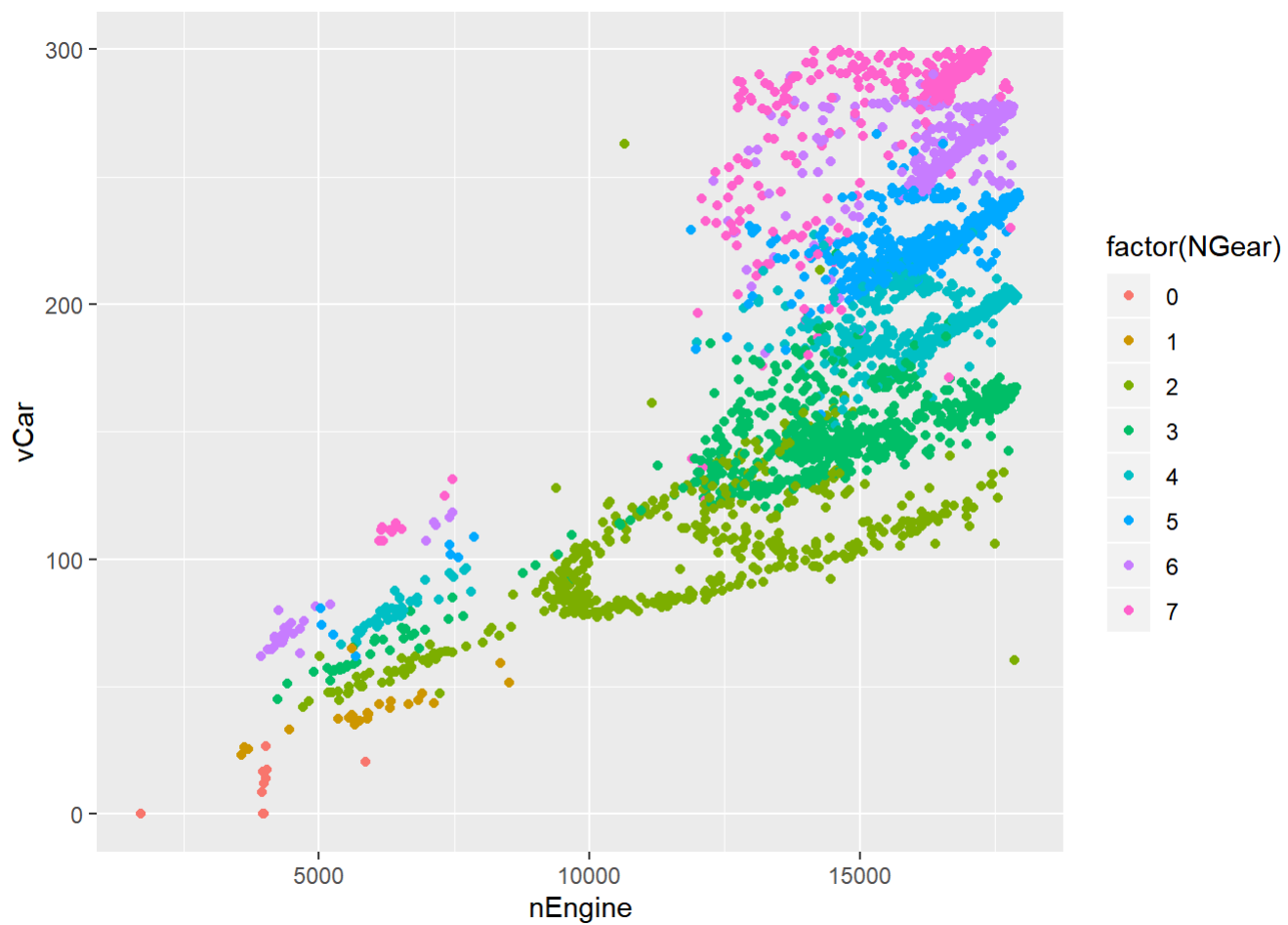
*#gLong by throttle and gear*

```
g = ggplot(df) + geom_jitter(aes(factor(NGear),gLong,col=rThrottlePedal)) + scale_colour_gradient(low='red',high='green')
print(g)
```



```
#gLong by throttle and gear
g=ggplot(df)+geom_point(aes(x=nEngine,y=vCar,col=factor(NGear)))
print(g)
```





*#Gives us an insight on the engine characteristics and where JB would extract the most from his engine*