#3 Bikeshare & Auto Loss Analysis - Shahin Shakeri

I use R notebooks in RStudio cloud and the data is stored in the clound on my google drive. I submitted this notebook in original format which can be simply be opened in R desktop and run.

1- Bikeshare with days added

1.a) Rentals ~ Weekends

```
library('lattice')
Bikeshare <- read.csv(url("https://drive.google.com/uc?export=download&id=1QwGCiIbESsE1RVjhKu9nivgvfyYFo
Bikeshare$Weekend=Bikeshare$Weekday==5 |Bikeshare$Weekday==6
```

```
model <- lm(Rentals~Temperature+ Humidity +Windspeed+Weekend ,data=Bikeshare)
summary(model)
```

```
##
## Call:
## lm(formula = Rentals ~ Temperature + Humidity + Windspeed + Weekend,
##     data = Bikeshare)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4710.2 -1080.9   -91.9  1053.0  3525.3
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   4009.2      341.0  11.759  < 2e-16 ***
## Temperature   6633.5      292.8  22.652  < 2e-16 ***
## Humidity     -3071.6      384.0  -7.998 4.99e-15 ***
## Windspeed    -4799.9      708.2  -6.777 2.53e-11 ***
## WeekendTRUE    182.0      116.7   1.560    0.119
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1424 on 726 degrees of freedom
## Multiple R-squared:  0.4627, Adjusted R-squared:  0.4597
## F-statistic: 156.3 on 4 and 726 DF,  p-value: < 2.2e-16
```

1.b) Registered ~ Weekends

```
model <- lm(Registered~Temperature+ Humidity +Windspeed+Weekend ,data=Bikeshare)
summary(model)
```

```
##
## Call:
## lm(formula = Registered ~ Temperature + Humidity + Windspeed +
##     Weekend, data = Bikeshare)
##
```

```
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3812.7  -995.0  -157.2   964.0  3110.5
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   3581.6      301.6  11.874  < 2e-16 ***
## Temperature   4569.1      259.1  17.636  < 2e-16 ***
## Humidity     -2274.6      339.8  -6.695 4.32e-11 ***
## Windspeed    -3702.7      626.6  -5.910 5.28e-09 ***
## WeekendTRUE   -193.4      103.3  -1.873   0.0614 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1260 on 726 degrees of freedom
## Multiple R-squared:  0.3517, Adjusted R-squared:  0.3481
## F-statistic: 98.47 on 4 and 726 DF,  p-value: < 2.2e-16
```

1.c) Casual ~ Weekends

```
model <- lm(Casual~Temperature+ Humidity +Windspeed+Weekend ,data=Bikeshare)
summary(model)
```

```
##
## Call:
## lm(formula = Casual ~ Temperature + Humidity + Windspeed + Weekend,
##     data = Bikeshare)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1383.7  -314.8  -107.3   127.5  2222.6
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)    427.6      128.5   3.327 0.000922 ***
## Temperature   2064.4      110.4  18.702  < 2e-16 ***
## Humidity      -797.0      144.8  -5.505 5.11e-08 ***
## Windspeed    -1097.2      267.0  -4.110 4.41e-05 ***
## WeekendTRUE    375.5       44.0   8.534  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 536.7 on 726 degrees of freedom
## Multiple R-squared:  0.3923, Adjusted R-squared:  0.389
## F-statistic: 117.2 on 4 and 726 DF,  p-value: < 2.2e-16
```

d) Weekends impacts casual rentals p<.05 but not significant for rental and registered (p>.05)

2- Autoloss

```
Autoloss <- read.csv(url("https://drive.google.com/uc?export=download&id=1-QuNWq7k4w3c8kBJ8BedIK1m-cpwO
Autoloss <-na.omit (Autoloss)
ByDoors=tapply(Autoloss$Losses, Autoloss$NumDoors, mean)
```

```
library(leaps)

regfit.full=regsubsets(Losses~., data = Autoloss, nvmax=11)
summary=summary(regfit.full)
summary
```

```
## Subset selection object
## Call: regsubsets.formula(Losses ~ ., data = Autoloss, nvmax = 11)
## 18 Variables  (and intercept)
##                     Forced in Forced out
## FuelTypegas             FALSE      FALSE
## Aspirationturbo         FALSE      FALSE
## NumDoorstwo             FALSE      FALSE
## BodyStylehardtop        FALSE      FALSE
## BodyStylehatchback      FALSE      FALSE
## BodyStylesedan          FALSE      FALSE
## BodyStylewagon          FALSE      FALSE
## DriveWheelsfwd          FALSE      FALSE
## DriveWheelsrwd          FALSE      FALSE
## Length                  FALSE      FALSE
## Width                   FALSE      FALSE
## Height                  FALSE      FALSE
## Weight                  FALSE      FALSE
## EngineSize              FALSE      FALSE
## Horsepower              FALSE      FALSE
## PeakRPM                 FALSE      FALSE
## Citympg                 FALSE      FALSE
## Price                   FALSE      FALSE
## 1 subsets of each size up to 11
## Selection Algorithm: exhaustive
##           FuelTypegas Aspirationturbo NumDoorstwo BodyStylehardtop
## 1  ( 1 )  " "         " "             " "         " "
## 2  ( 1 )  " "         " "             " "         " "
## 3  ( 1 )  " "         " "             "*"         " "
## 4  ( 1 )  " "         " "             "*"         " "
## 5  ( 1 )  " "         " "             "*"         " "
## 6  ( 1 )  " "         " "             "*"         " "
## 7  ( 1 )  " "         " "             "*"         " "
## 8  ( 1 )  " "         " "             "*"         " "
## 9  ( 1 )  " "         " "             "*"         " "
## 10  ( 1 ) " "         " "             "*"         " "
## 11  ( 1 ) " "         " "             "*"         " "
##           BodyStylehatchback BodyStylesedan BodyStylewagon DriveWheelsfwd
## 1  ( 1 )  " "                " "            " "            " "
```

```
## 2  ( 1 )  " "                 " "            " "            " "
## 3  ( 1 )  " "                 " "            " "            " "
## 4  ( 1 )  " "                 "*"            " "            " "
## 5  ( 1 )  " "                 "*"            " "            " "
## 6  ( 1 )  " "                 "*"            " "            " "
## 7  ( 1 )  "*"                 "*"            " "            " "
## 8  ( 1 )  "*"                 "*"            " "            " "
## 9  ( 1 )  "*"                 "*"            " "            " "
## 10  ( 1 ) "*"                 "*"            "*"            " "
## 11  ( 1 ) "*"                 "*"            " "            " "
##           DriveWheelsrwd Length Width Height Weight EngineSize Horsepower
## 1  ( 1 )  " "            " "    " "   "*"    " "    " "        " "
## 2  ( 1 )  "*"            " "    " "   "*"    " "    " "        " "
## 3  ( 1 )  "*"            " "    " "   "*"    " "    " "        " "
## 4  ( 1 )  " "            " "    " "   "*"    " "    " "        " "
## 5  ( 1 )  "*"            " "    " "   "*"    " "    " "        " "
## 6  ( 1 )  "*"            " "    " "   "*"    " "    " "        " "
## 7  ( 1 )  "*"            " "    " "   "*"    " "    " "        " "
## 8  ( 1 )  "*"            " "    " "   "*"    " "    "*"        " "
## 9  ( 1 )  "*"            " "    " "   "*"    " "    "*"        "*"
## 10  ( 1 ) "*"            " "    " "   "*"    " "    "*"        "*"
## 11  ( 1 ) "*"            " "    "*"   "*"    "*"    "*"        "*"
##           PeakRPM Citympg Price
## 1  ( 1 )  " "     " "     " "
## 2  ( 1 )  " "     " "     " "
## 3  ( 1 )  " "     " "     " "
## 4  ( 1 )  " "     "*"     " "
## 5  ( 1 )  " "     "*"     " "
## 6  ( 1 )  "*"     "*"     " "
## 7  ( 1 )  "*"     "*"     " "
## 8  ( 1 )  "*"     "*"     " "
## 9  ( 1 )  "*"     "*"     " "
## 10  ( 1 ) "*"     "*"     " "
## 11  ( 1 ) "*"     "*"     " "
```

3- Model - Sallaries

```
function(Gender, IQ, GPA){
  return (45 + Gender*30+IQ*.05,+20*GPA)
}
```

```
## function(Gender, IQ, GPA){
##   return (45 + Gender*30+IQ*.05,+20*GPA)
## }
```