Regression\_Model\_Coursera

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## R Markdown

library(ggplot2)

## Warning: package 'ggplot2' was built under R version 4.3.1

data(mtcars)  
mtcars$vs <- factor(mtcars$vs)  
mtcars$am.label <- factor(mtcars$am, labels=c("Automatic","Manual")) # 0=automatic, 1=manual  
mtcars$gear <- factor(mtcars$gear)  
mtcars$carb <- factor(mtcars$carb)  
head(mtcars)

## mpg cyl disp hp drat wt qsec vs am gear carb am.label  
## Mazda RX4 21.0 6 160 110 3.90 2.620 16.46 0 1 4 4 Manual  
## Mazda RX4 Wag 21.0 6 160 110 3.90 2.875 17.02 0 1 4 4 Manual  
## Datsun 710 22.8 4 108 93 3.85 2.320 18.61 1 1 4 1 Manual  
## Hornet 4 Drive 21.4 6 258 110 3.08 3.215 19.44 1 0 3 1 Automatic  
## Hornet Sportabout 18.7 8 360 175 3.15 3.440 17.02 0 0 3 2 Automatic  
## Valiant 18.1 6 225 105 2.76 3.460 20.22 1 0 3 1 Automatic

T\_variance\_analysis <- aov(mpg ~ ., data = mtcars)  
summary(T\_variance\_analysis)

## Df Sum Sq Mean Sq F value Pr(>F)   
## cyl 1 817.7 817.7 102.591 2.3e-08 \*\*\*  
## disp 1 37.6 37.6 4.717 0.04525 \*   
## hp 1 9.4 9.4 1.176 0.29430   
## drat 1 16.5 16.5 2.066 0.16988   
## wt 1 77.5 77.5 9.720 0.00663 \*\*   
## qsec 1 3.9 3.9 0.495 0.49161   
## vs 1 0.1 0.1 0.016 0.90006   
## am 1 14.5 14.5 1.816 0.19657   
## gear 2 2.3 1.2 0.145 0.86578   
## carb 5 19.0 3.8 0.477 0.78789   
## Residuals 16 127.5 8.0   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

T\_multivar <- lm(mpg ~ cyl + disp + wt + am, data = mtcars)  
summary(T\_multivar)

##   
## Call:  
## lm(formula = mpg ~ cyl + disp + wt + am, data = mtcars)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -4.318 -1.362 -0.479 1.354 6.059   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 40.898313 3.601540 11.356 8.68e-12 \*\*\*  
## cyl -1.784173 0.618192 -2.886 0.00758 \*\*   
## disp 0.007404 0.012081 0.613 0.54509   
## wt -3.583425 1.186504 -3.020 0.00547 \*\*   
## am 0.129066 1.321512 0.098 0.92292   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 2.642 on 27 degrees of freedom  
## Multiple R-squared: 0.8327, Adjusted R-squared: 0.8079   
## F-statistic: 33.59 on 4 and 27 DF, p-value: 4.038e-10

## Including Plots

You can also embed plots, for example:

