

APM 630 Regression Analysis

Project #3 – Multiple Linear Regression

Data: MLP.xls

A study was conducted to develop a regression model for estimating car gasoline mileage (MPG) by the features of car. A random sample of cars ($n = 32$) was selected with

Dependent variable:

- MPG – miles per gallon.

Predictor variables:

- WT – car weight in pound.
- SIZE – car engine power rating in cubic inches.
- HP – car engine horse power.
- BARR – the number of barrels in carburetor.

Assignment:

1. Compute descriptive statistics for all variables.
2. Compute correlations among all variables.
3. Draw a matrix scatterplot of MPG and four predictor variables.
4. Fit the full model (including the 4 predictor variables) to the data.
5. Summarize the model fitting for the full model (e.g., coefficient estimates, statistical testing, STB, R^2 , adj R^2 , RMSE, PRESS, AIC, etc.).
6. Select a "**BEST**" model using **Stepwise** selection method (SLE=0.15 and SLS=0.05).
7. Summarize the model fitting for the best model (e.g., coefficient estimates, statistical testing, STB, R^2 , adj R^2 , RMSE, PRESS, AIC, BIC, etc.).
8. Compare the "**BEST**" model with your **FULL** model (model fitting statistics, significance of the coefficients, etc.).