**MULTIVARIATE DATA ANALYSIS (*BIA 652)***

Spring 2017

Homework 5

**DUMMY VARIABLES**

A car company hires male and female drivers and is interested to know if MPG is a function of the driving style of male and female drivers. Following data is generated by randomly assigning male and female drivers and recording their miles per gallon after 300 miles

Miles Per Gallon Age of the Car Gender of Driver

22.3 3 M

22.0 4 F

23.7 3 F

24.2 2 M

25.5 1 F

21.1 5 M

20.6 4 M

24.0 1 M

26.0 1 F

23.1 2 M

24.8 2 F

20.2 5 M

1. Do a scatter plot of MPG and Age of the Car and on the scatter plot indicate male and female drivers with different symbols
2. Fit a regression model to Age of the Car and Gender of Driver and interpret the coefficient of Gender of Driver
3. Fit a Regression line for male drivers and another regression line for female drivers and plot both lines on the same graph
4. Ignore the Gender of Driver and fit a regression to line to MPG and Age of the Car
5. Plot all the three regression lines on the same graph. Are the three lines approximately parallel?