**Homework 2 – Ch. 3** – due Wednesday, October 1, 2014

As a reminder, you need to attach to an email your R code and output/answers for these problems. Please also bring a print out of the output/answers ready to be graded to class with your names on it.

**1.)**

a. Produce a table of correlations for all of your quantitative variables. What two variables are most highly correlated with what you feel is your reasonable Y variable?

b. Produce a scatter plot matrix of all explanatory variables and your reasonable Y variable. Is there anything noticeable in your plots?

c. Do the plots from part b seem to coincide with the correlations you did in part a? Should they? Explain.

d. Fit a linear model of your reasonable Y variable on all of your quantitative explanatory variables. Evaluate the goodness of the fit of this model by commenting on the residual standard error, *s*, the coefficient of determination, *R²,* and its adjusted version, *R²a.*

e. Comment on which variables in the above model are significant and explain how you know.

f. Interpret the coefficient of your 2nd variable.

g. Fit a new model, dropping the first explanatory variable from the model in part (d). Summarize the fit of this model by citing the residual standard error, *s*, the coefficient of determination, *R²,* and its adjusted version, *R²a*.

h. How do these values in part (g) compare to the ones from the model fit in part (d**)? Did you expect this given the p-value of the variable that you dropped? Explain.**

**What does this sentence mean?**

1. Re-interpret the same variable from part (f) in your new model from part (g).

**j.** Take one of your explanatory variables from the model in part (d) and compute its partial correlation coefficient with the y variable. What is the interpretation of this coefficient?

k. Produce an added variable plot for the variables above. Check that the correlation associated with this plot agrees with your answer in part (g). Also, comment on the difference of the correlation and scatterplot before and the partial correlation and added variable plot now.

l. Re-run the regression in part (g), after removing observation 9. Comment on any notable changes in the model.