Assignment 8. Correlation. Due Tuesday, November 20 at 3PM

Use hypothesis testing to answer the questions below. ***For each problem, make sure to state your null and research hypotheses <u>in words</u> as well as using <u>formal notation</u>. After finishing the test, state your <u>formal conclusion</u> with regard to the null hypothesis as well as your <u>substantive answer</u> to the question.*** Please make sure to print out and include your Stata output (log and graph) with this assignment.

1. We are interested to find out if one's hours of sleep are related to level of stress. We draw a random sample of 30 and calculate a sample correlation coefficient $r = -.387$. On the basis of this correlation coefficient, what can we say about the <u>strength and direction</u> of the relationship between one's hours of sleep and the level of stress? Using 99% confidence level, can we conclude that there is a relationship between one's hours of sleep and the level of stress in the broader population?

2. Calculate coefficients of determination and alienation for problem #1. What do they tell us about the variance in one's hours of sleep and the level of stress?

3. Use Stata on gss2012.dta dataset and focus on variables *hrs1* and *tvhours* to evaluate whether, among employed Americans, there is a relationship between the number of hours spent working and the number of hours spent watching TV. Use 99% confidence level for this assessment. If such a relationship exists, please describe it substantively with regard to its strength and direction.

4. Use Stata to construct a scatterplot with a lowess curve for *hrs1* and *tvhours*. (include hrs1 on the horizontal axis and tvhours on the vertical axis). Using this graph, discuss whether the relationship is or is not linear and explain why you see it that way.