Assignment #13

An Introduction to R

(exploring bivariate data sets)

Directions: Use R-Studio to help answer the following questions. You are going to hand in a WORD document with all of your answers included. You can have imbedded R-Studio graphs and cut-and-pasted R-Studio print-out, but, your narrative and your responses should be as thorough as always. Focus on how R-Studio can help find the needed analytics to support your statistical analysis and overall responses.

Ask me any questions along the way. Make sure your formatting is consistent throughout. Practice writing formulas and subscripts in Word/Google Documents. Save your work and your formulas so you will be able to easily access them in the future.

TRY to save a .R file so ALL of your work can be found at a later time in order to accumulate a collection of evidence throughout the year. There is no need to re-create the wheel every assignment.

Before you start, save your work as you go in a WORKING DIRECTORY of your choice. Organize your Folders to keep yourself organized. We will use this saved R-code next week for another assignment.

1) There is a data set called USArrests. Get it.

2) Create a plot comparing assault rates in each state as a predictor to murder rates.
(Include a title, x- and y-axis labels, colors and a new shape. Include the plot and the code.)

3) Run a regression analysis representing the relationship of assault rates predicting murder rates.
(Copy and paste the code and the summary output onto your paper.)

4) Check the conditions needed in order to run linear regression inferences.
(Just a residual plot will do. Include a title and axes labels. Include code as well.)

5) What is the predicted murder rate for a state having an assault rate of 300?
(Formula, substitute, answer.)

6) Give a 95% confidence interval for the slope. Interpret.
(Formula, substitute, answer, then interpretations.)

7) Find and interpret s_e.

8) Is there evidence that a statistically significant relationship exists between assaults and murders?
(Give H_o and H_a, formula of test statistics, substitute, and answer. Also, give p-value and interpret your results.)