POS 4734: HW #2

Instructions and Information: Answer each question in a new document, and <u>show your work</u> where applicable. Present exercises in numerical order, and label your answers clearly.

1. Which of the following values represents a strong correlation value?

(a) 0.06
(b) -0.25
(c) 0.10
(d) -0.78

2. Which of the following represents a confounding factor that needs to be controlled for if you are testing the relationship between Years of Education someone has and Annual Salary? (In other words you hypothesize that Years of Education will result in a higher Annual Salary, which of the following could possibly be a confounding factor in regards to this relationship)

(a) A person's age
(b) Whether a person owns a cat
(c) A person's eye color
(d) Whether a person goes to church often

3. In an experiment, what group is subjected to your independent (X) variable?

(a) The Control Group
(b) The Treatment Group
(c) The Experimental Group
(d) The Standard Group

4. Which of the following p-values (tests of statistical significance) signifies that you have found a statistically significant relationship?

(a) 0.001
(b) 0.567
(c) 0.983
(d) 0.121

5. To properly conduct a correlation both of your variables must be:

(a) Categorical
(b) Continuous
(c) Positive
(d) Between 1-7

6. You are interested in discovering whether Evangelical Christians support Donald Trump. To answer this research question you write the following hypothesis:

H_A: *States with a higher percentage of Evangelical Christians will vote for Trump at a higher rate than other states.*

You begin to collect data to answer this question and decide to run a correlation to determine if there is a relationship between Evangelical Christians and support for Donald Trump. Using the data below calculate the correlation between percentage Evangelical and percent of the vote for Trump in 2016. What was your correlation result?

State	Percent Evangelical	Percent Vote Trump
Michigan	25	47
Oklahoma	47	65
Iowa	28	51
Vermont	11	30
California	20	31
Maryland	18	34

The mean of Percent Evangelical is 24.83 with a Standard Deviation of 12.35, and the mean of Percent Vote Trump is 43 with a Standard Deviation of 13.84.

Remember the correlation formula:

$$r = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{(n-1)s_y s_x}$$