**Statistics for Psychology - PSYCH-UH 1004Q**

**Homework #4**

20 points

(The homework assignments will never require you to use R unless the problem explicitly says “use this R code”. For other problems, can use R if you find it useful, they should be completed easily by hand.)

1. a. A. In a one-group *t*-test based on a sample of 20 participants, what is the value for df?
(1 point)

b. What are the two-tailed critical *t*-values for the same sample size and with alpha = .05?
(1 point)

c. What are the two-tailed critical *t*-values for the same sample size and with alpha = .01?
(1 points)

d. What is the one-tailed critical *t*-value for the same sample size and with alpha = .05?
(1 point)

e. What is the one-tailed critical *t*-value for the same sample size and with alpha = .01?
(1 point)

2. The calculated *t*-value for a one-sample experiment was 1.1. Which of the following can you conclude? (1 point)

a. The sample mean must have been very close to the mean of the null hypothesis distribution.

b. The sample variance must have been quite large.

c. The sample size (n) could not have been large.

d. The null hypothesis cannot be rejected at the .05 level.

e. None of the above can be concluded without further information.

3. A psychologist would like to know how many casual friends are in the average person’s social network. She interviews a random sample of people and determines for each the number of friends or social acquaintances they see or talk to at least once a year. The data are as follows: 5, 11, 15, 9, 7, 13, 23, 8, 12, 7, 10, 11, 21, 20, 13.

First, you will find the 90% confidence interval for the mean number of friends for the entire population.

1. Show us the general formula for calculating CIs. (1 point)
2. What is the critical *t* value for a 90% CI with this sample size? (1 point)
3. What is the mean of the sample ($\overbar{X}$)? (1 point)
4. What is the standard error? ($s\_{\overbar{x}}$)? (1 point)
5. Plug the values into the equation: (1 point)
6. Give us the upper bound: (1 point)
7. Give us the lower bound: (1 point)

Next, you will find the 95% CI.

1. What is the critical *t* value for a 95% CI with this sample size? (1 point)
2. What is the mean of the sample ($\overbar{X}$)? (1 point)
3. What is the standard error? ($s\_{\overbar{x}}$)? (1 point)
4. Plug the values into the equation: (1 point)
5. Give us the upper bound: (1 point)
6. Give us the lower bound: (1 point)
7. If the null hypothesis is that the population mean is 10 causal friends per person, use the CI to decide if the null hypothesis be rejected at the .05 level, two-tailed? (1 point)