**DATA 557**

**Winter 2019**

**Homework Assignment 4**

**Instructions**

Submit your solutions **in pdf format** to the dropbox on the canvas page by **5:00PM, Wednesday February 6**.

This homework is not a group project. However, you may work together to help each other identify articles and to solve problems, but you should do all the work, create your own solutions, and hand in your own work without copying others’ work. You should not purposefully use the same article as a classmate.

*Your assignment for this homework is to identify a published article (in any field) that makes use of t-tests and to describe and critique the use of the t-test in the article using the outline below. (Note: it is not necessary to critique other aspects of the article besides the use of the t-test.) Your article should be available on-line (either publicly available or available through the UW libraries electronic journals). Provide a link to the article in your solution. Avoid articles that are very long or excessively technical. If you have trouble finding a suitable article, email me for suggestions.*

1. How many t-tests were reported in the article? For this question, include all types of “t-tests” including 1-sample or 2-sample t-tests, equal-variance, Welch t-test, large-sample t-test, etc. In some papers it is not clear how many tests were reported, in which case, you can give an answer of the form “at least …..”.

2. If there was more than one t-test reported was there one test that was reported as the primary hypothesis test? If the authors did not designate one test as primary, choose one of the t-tests reported that you believe to be the most important test. (Look for one that is described in the abstract of the article or is used as a basis for a conclusion described in the abstract.)

*For all remaining questions answer with respect to the t-test that the authors declared as primary or the one that you selected as most important. For all questions, if the authors did not provide clear information to allow you to answer the question, point out what information was lacking.*

3. Which type of t-test was performed, e.g., 1-sample, 2-sample, equal-variance, Welch, etc. Was the test 1-sided or 2-sided?

4. Did the authors give a statement of statistical significance or lack of statistical significance? If so, what significance level did they use?

5. List all of the following elements that were reported for the test: sample means in the two groups, difference between sample means, SDs in each group, SE of the difference between sample means, test statistic, p-value.

6. Did the authors report a confidence interval corresponding to their test?

7. Did the authors provide a sample size justification or power calculation for the test?

8. Do the assumptions of the test appear to be met? Answer as well as you can given the information provided by the authors. (Also see the next question.)

9. Did the authors provide enough information for you to assess the assumptions? If not, what additional information would you have needed to properly assess the assumptions?

10. What was the conclusion from the test. (You can include a short quotation of the statement of their conclusion.) Do you think their conclusion was justified? Why or why not?