

Assignment 1, 32 Marks  
DANA 4810  
Fall 2022, Due: September 29

Please include your RStudio output to support your answers and  
use 0.05 level of significance

1- Eating disorder study. Data from a psychology experiment were reported and analyzed in American Statistician (May 2001). Two samples of female students participated in the experiment. One sample consisted of 11 students known to suffer from the eating disorder bulimia; the other sample consisted of 14 students with normal eating habits. Each student completed a questionnaire from which a “fear of negative evaluation” (FNE) score was produced. (The higher the score, the greater the fear of negative evaluation.) Do the data support that bulimics tend to have a greater fear of negative evaluation? Explain. Data set: BULIMIA

Note: make sure you use appropriate graph(s) to check the data conditions first. Comment on the graphs. Perform a complete hypothesis testing even if the conditions are not valid (for the sake of practice.) (15 marks)

2- Jelly Belly Candy Company is testing two machines that use different technologies to fill three pound bags of jelly beans. The file Bags contains a sample of data on the weights of bags (in pounds) filled by each machine.

a) Do the data support that the mean bag weights for the two machines are different? Data set: BAGS (7 marks)

b) Construct a 95% confidence interval for the difference between the mean bag weights for the two machines? Interpret the interval in the context of the question. (4 marks)

3- The College Board SAT college entrance exam consists of three parts: math, writing, and critical reading. TestScores data file contains the math and writing scores for a sample of 12 students who took

the SAT exam.

a) What is the point estimate of the difference between the mean scores for the two tests? What are the estimates of the population mean scores for the two tests? Which test reports the higher mean score? (1 mark)

b) Use a  $\alpha = 0.05$  level of significance and test for a difference between the population mean for the math scores and the population mean for the writing scores. (5 marks)