

The t-Distribution

1. A cereal company claims that there are at least 80 raisins in every box of its raisin bran. You decide to test the claim at a significance level (α) of .05. You randomly sample 25 boxes of cereal made by the company and find the sample mean to be 77.8 raisins with a sample standard deviation of 5.5 raisins.

(a) What are the null and alternate hypotheses?

(b) Draw the picture of the distribution of the test statistic (under H_0). Include critical value(s) and region(s) of rejection.

(c) What is the calculated (computed) value of the test statistic?

(d) What is your conclusion?

2. A researcher is interested in measuring the average job satisfaction score (0 = lowest and 100 = highest) among full-time faculty at a college. She randomly samples 25 professors and finds the average job satisfaction to be 48.4 with a standard deviation of 6.1. Assume that job satisfaction follows a normal distribution.

(a) Using the above data, construct a 95% CIE for job satisfaction at this college.