STAT-243 Name: _____
Spring 2016

Worksheet 10: Confidence Intervals

1. A researcher is investigating how companies use the postal service to dispense advertising and promotional information. A random sample of 49 households was selected and each household was asked how many pieces of advertising and promotional material it received within the past week. The mean of the sample was 15.9, and the sample standard deviation was 4.8.

a. When constructing a confidence interval, should we use a z-interval or a t-interval? Why?

b. Construct a 95% confidence interval for the population mean number of pieces of advertising and promotional material that a household receives in a week.

c. Summarize your results with a statement such as: "With 95% confidence, the true mean number of advertising and promotional mail per household per week lies between..."

d. The researcher wants the margin of error to be no more than 1. What should the sample size be to get a margin of error that is less than or equal to 1? The sample standard deviation can be used as an estimate of the population standard deviation σ.

2. A marketing firm is trying to estimate the proportion of potential car buyers that would consider purchasing a hybrid vehicle.

a. The firm would like their pilot study to have a margin of error that is no more than 4%. How many people should be in the pilot study in order to meet this goal at the 95% confidence level?

In a sample of 600 potential car buyers, 376 indicated that they would consider purchasing a hybrid gas/electric-powered car.

b. What is the point estimate for the proportion of potential car buyers that would consider buying a hybrid vehicle? Calculate this value.

c. Find the 95% confidence interval for the true population proportion of potential car buyers that would consider purchasing a hybrid vehicle.

d. Name two ways we could reduce the margin of error. (Hint: think about the sample size n and the confidence level.)