Statistics 104 – Homework 8

Due Thursday, November 18, 2010

Homework is due on the due date at the end of the lecture.

Reading:  
November 9 – November 16  Sections 8.1, 8.2, 8.4, 9.1 and 9.2  
November 18 – December 2  Sections 8.3, 9.3, and 9.4

Assignment:

1. Complete the following problems from the text: 8.1, 8.7, 8.13, 8.23, and 8.47

2. In a USA Today/Gallup Poll conducted between October 28th and 31st, 2010 a random sample of 2,240 adults from across the U.S. were asked the question: “Do you consider yourself to be a supporter of the Tea Party movement, an opponent of the Tea Party movement, or neither?” 582 were supporters, 605 were opponents, 896 were neither and 157 were unsure.

a) What is the population? Be specific.
b) What is the sample? Be specific.
c) Are the conditions met for constructing a confidence interval for a population proportion based on this sample? Support your answer.
d) Construct a 95% confidence interval for the population proportion of supporters of the Tea Party movement.
e) How would a 90% confidence interval compare to the one you constructed in d? You should comment on the centers of the intervals and the widths of the intervals. Note: You do not need to construct a 90% confidence interval to answer this question.
f) With 80% confidence, what proportion of the population is neither a supporter nor an opponent of the Tea Party movement?

3. A random sample of 400 students is selected from the 28,000 students at a large Midwestern university. The students were asked “Over the past weekend did you consume alcoholic beverages?” 246 students answered yes.

a) What is the population? Be specific.
b) What is the sample? Be specific.
c) Construct a 90% confidence interval for the proportion of all students at the university who consumed alcoholic beverages over the past weekend.
d) Based on your confidence interval in c) would you say that two thirds of all students at the university consumed alcoholic beverages over the past weekend? Explain briefly.
e) The margin of error for the confidence interval is fairly large. How large a sample would you have to take so that with 90% confidence the margin of error would be 0.02?