Statistics 104 – Homework 10

Due Thursday, November 21, 2013
Homework is due on the due date at the end of the lecture.

Reading: November 12 – November 19 Sections 8.1, 8.2, 8.4, 9.1 and 9.2
           November 21 – December 5 Sections 8.3, 9.3, and 9.4

Assignment:

1. Complete the following problems from the text: 8.7, 8.13, and 8.47
   
   8.7 Believe in heaven?

   8.13 How green are you?

   8.47 Binge drinkers.
2. In a Gallop Poll conducted between October 3rd and 6th, 2013 a random sample of 1,028 adults from across the U.S. were asked the question: “In general, do you feel that the laws covering the sale of firearms should be made more strict, less strict, or kept as they are now?” 504 answered more strict, 134 answered less strict, 380 answered keep the same and 10 were unsure.

a) What is the population? Be specific.

b) What is the sample? Be specific.

c) Are the conditions for constructing a confidence interval for a population proportion based on this sample satisfied? Support your answer.

d) Construct a 95% confidence interval for the population proportion of U.S. adults who would answer that the laws covering the sale of firearms should be made more strict.

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 would answer that the laws covering the sale of firearms should be kept as they are now?
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?” 154 students answered no.

a) What is the population? Be specific.

b) What is the sample? Be specific.

c) Construct a 90% confidence interval for the population proportion who did not consume alcoholic beverages over the past weekend.

d) Based on your confidence interval in c) would you conclude that 40% of all students at the university did not consume 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?