Statistics 104 – Homework 9

Due Thursday, December 2, 2010

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

Reading:
November 10 – November 17  Sections 8.1, 8.2, 8.4, 9.1 and 9.2
November 19 – December 3 Sections 8.3, 9.3, and 9.4

Assignment:

1. Complete the following problems from the text: 9.1, 9.2, 9.9, and 9.10.

2. A large manufacturer that sells consumer products on-line wishes to publicize its customer satisfaction in an advertisement. Specifically, it wants to state that over 90% of the manufacturer’s customers would tell a friend to buy a product from the manufacturer. The manufacturer selects a random sample of 1,000 customers from its database of over 2 million customers, contacts them via email and asks them the question “Would you tell a friend to buy a product from us?” 922 say yes and 78 say no.

   a) What is the population?
   b) What is the sample?
   c) Verify that the conditions are satisfied.
   d) Give a null and alternative hypothesis for the proportion of all customers who would tell a friend to buy a product from the manufacturer.
   e) Compute the value of the test statistic and convert this to a P-value.
   f) Use the P-value to make a decision whether or not to reject the null hypothesis.
   g) State a conclusion, within the context of the problem, which addresses whether or not it is appropriate for the manufacturer to make the claim of over 90% satisfaction in its advertisement.

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. We wish to see if this data is consistent with the statement that 67.5% of college students report that they used alcohol at least once recently.

   a) What is the population? Be specific.
   b) What is the sample? Be specific.
   c) Verify that the conditions for a hypothesis test are satisfied.
   d) Set up a null and alternative hypothesis for the proportion of all students at the large Midwestern university who have used alcohol recently. Hint: You should use a two-sided alternative.
   e) Compute the value of the test statistic and convert this to a P-value.
   f) Use the P-value to make a decision whether or not to reject the null hypothesis.
   g) State a conclusion, within the context of the problem.