Statistics 104 – Homework 7

Due Thursday, November 5, 2009
Homework is due on the due date at the end of the lecture.

Reading: October 27 – November 3 Chapters 7

Assignment:

1. Complete the following problems from the text: 7.7, 7.10, 7.11, 7.23, 7.24, 7.29, and 7.30.

2. The maker of M&M's says on its website that 20% of Almond M&M's are yellow. Suppose that M&M's are packaged at random. We wish to examine the sample proportion of yellow M&M's, $\hat{p}$, in various sized bags.

   a) For each of the different sized bags, give the mean and standard deviation of the sampling distribution of $\hat{p}$. Also comment on whether or not the conditions are met for the sampling distribution to be approximately normal.

      i) Fun size bags containing 25 M&M's.
      ii) Small bags containing 50 M&M's
      iii) Large bags containing 200 M&M's
      iv) Extra large bags containing 400 M&M's

   b) For the extra large bags containing 400 M&M's, use the 68-95-99.7 Rule to describe how the sample proportion of yellow M&M's might vary from bag to bag.
   c) In an extra large bag of 400 M&M's there are only 52 yellow M&M's. Is this an unusually small number of yellow M&M's? Explain.

3. In an ABC News/Washington Post poll conducted between October 15 and October 18, 2009, 57% of those surveyed said they approved of the way Barack Obama is handling his job as president while 40% of those surveyed disapproved of the way he was handling his job and 3% were unsure. The poll asked 1,004 randomly selected adults in the U.S. the question: "Do you approve or disapprove of the way Barack Obama is handling his job as president?"

   a) What is the population?
   b) What is the sample?
   c) Give the number, not a proportion or a percentage, of adults in the sample who approve of President Obama's performance.
   d) The poll has a margin of error of 3.2 percentage points. What proportion of the entire U.S. adult population approve of the way President Obama is handling his job?

4. The next page has a screen shot of the web page that simulates sampling from a population with a quantitative variable.

   a) Describe the shape of the black population distribution.

b) Sketch in the distribution of the sample mean $\bar{y}$ for random samples of size 16 and 25 in the spaces provided below.

c) What are the means and standard deviations of these distributions?

Sample size	16	25
Mean		
Standard Deviation