SPRING 1997

Statistics 200B
Lab 2: Demographics of Fort Evans

This week you will do further sampling of Fort Evans in order to get a view of some of its demographic characteristics.

The first task is to get an idea of the size of the population of Fort Evans in each of its regions. Take a simple random sample of size 100 and find the proportion of the sample in each of the regions. The mayor asks you what these proportions are and how accurately you think you have estimated the true proportions. What do you tell her? The total population of Fort Evans is 155197. Estimate the total population of each of the regions and provide the mayor these estimates and 90% confidence intervals. What would you tell her if she demanded confidence intervals that were only half as wide as those you have produced?

Now for pedagagical purposes do the following exercise:

1. Pick a region.
2. What is your estimate of the proportion of the population in that region and what is the standard error of your estimate?
3. Form a 95% confidence interval for the true proportion.
4. Draw 50 samples of size 100 and for each find the proportion of the population in the selected region.
5. Make a histogram of the 50 estimates.
6. Graphically show your original estimate and the confidence interval on the histogram.

Now back to exploring the demographics of Fort Evans. Take a big sample of size 500. From this sample, estimate the proportion of unemployed adults looking for work and its standard error. Form a 95% confidence interval for the proportion. Also estimate the total number of unemployed adults looking for work, its standard error and a 95% confidence interval Save a copy of these results for the next assignment.

Using data in the sample on other variables try to build up a "map" of Fort Evans that shows how the regions differ from each other. You don't have to consider all the variables—just choose a few. Experiment with some graphical summaries of the sample, for example barplots, boxplots, dot charts, histograms, and pie charts. Which are effective in conveying the characteristics of the sample? In class next week, your findings will be combined with those of other students to build up a composite picture of the city's demographic characteristics.