

Math 1100: Week 1: Where does data come from and how is it used?

- **Section 1.1**

- Vocabulary
 - population, population parameter
 - sample, sample statistic
 - margin of error and level of confidence
- **Work:** Page 10, problems 16–21.

- **Section 1.2**

- Vocabulary
 - samples: random, systematic, convenience, cluster, stratified
 - representative versus biased samples
- **Work:** Go to the web page *Household Data Technical Notes*

<http://www.bls.gov/cps/cpstn952.htm>

at the Bureau of Labor Statistics web site. Find the details on how the Bureau chooses the 60,000 households in its monthly survey.

- **Section 1.3**

- Vocabulary
 - observational study, case-control study
 - experiment, treatment group, control group
 - confounding factors; placebo, double-blind

HOMEWORK 1

Due Wednesday, September 4, 2002.

Introduction. There are two ways of finding out about the world:

- You can watch what happens (Dad and buddies smoke cigars and have a good time),

...OR...

- You can do something (smoke one of Dad's cigars) and observe the results (nausea and an angry Dad).

The first was an observational study (with a very limited amount of data that happened to suggest a link between smoking cigars and having good time). The second was an experiment (failing to demonstrate a causal relationship between smoking cigars and having a good time). In an observational study the investigator just observes. In an experiment, in contrast, the investigator does something and then tries to measure the effect. Polls and surveys are observational studies. Trials of a new drug are often experiments. (A medical researcher gives the experimental drug to one group of patients and compares how they do with another group that has not received the experimental drug, but a placebo instead.)

Part 1. Find an article in a newspaper or magazine or on the web that reports on an observational study. A couple of good sources are HealthScout and The New York Times, but you may use any source that you want. Write an essay of no more than 100 words that answers the following questions: 1) Why was the study undertaken? 2) What did the study attempt to measure? 3) What data was collected? 4) Was a sample used? 5) What conclusions were drawn?

Part 2. Find an article in a newspaper or magazine or on the web that reports on an experiment. Write another essay of no more than 100 words that answers the following questions: 1) Why was the study undertaken? 2) What variable was controlled by the experimenter? 3) What variable was affected? 4) What other variables might have caused the effects observed? 5) What conclusions were drawn?