

1. Some Questions Cannot Be Answered with an Experiment

May not be ethical, may be physically impossible, may be too expensive, too time consuming etc.

2. Observational Studies vs. Experiments

Basic idea: in the observational study the researcher collects the data as they currently are, he or she is not "in charge" of assignment. In other words, the researcher cannot assign a treatment so for these kinds of studies there are:

- *No True Treatment Groups*
- *No True Controls*

Observational studies are inexpensive and do not require as much thoughtfulness.

3. Useful for Description and to Demonstrate ASSOCIATION

Polls & Surveys are the most common example of description

Association is not the same as causation (important) due to...

4. The Basic Problem: CONFOUNDING

Idea: a lack of clarity, the "effect" is not clear/clean/trustworthy

5. But there are SOLUTIONS, things you can do to control them

- *Divide the subjects into subgroups*
- *Conduct a prospective (follow subjects over time) study*
- *Conduct a retrospective study using evidence like medical records*

6. Things to Remember (Chapters 1 & 2)

Randomized, controlled experiments are more expensive and more difficult to do than observational studies.

Experiments can also be unrealistic (in an artificial setting) and unethical (smoking studies).

Controlled Experiments are better than observational studies in that a researcher can begin to eliminate confounding and pin down cause and effect. In an experiment, researchers impose a treatment on randomized subjects. This is not true of observational studies.