Sampling

Objectives

1. Classify a data collection method as an observational study or an experiment

2. Examine various sampling methods

3. Examine various types of observational studies and experiments

4. Examine errors and other issues in sampling

Observational Study

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In other words, the researcher observes behaviors and takes notes, but does not interject themselves into the study.

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Typically divided into 2 groups:

- **Experimental**: group that receives the treatment.
- **Control**: group that either does not receive treatment or receives a "fake" treatment (such as a *placebo*).

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However, keep in mind that **good sampling incorporates randomness into the process.**

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  - Starting at n, take every k^{th} subject thereafter.

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  - Also known as a *voluntary response sample*.

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  - Collect future data from groups with common factors.

Types of Experiments

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  - Neither the researcher nor the subject knows which group the subject is in; a third party knows but does not reveal.

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- Researchers will control the effects of the variables using such techinques as blinding.

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- **Nonsampling error**
  - Sample data isn't collected, recorded, or analyzed correctly.
- **Not using randomness**
  - Avoid (or take with healthy dose of skepticism) sample data that does not have some component of randomness to it, such as a convenience sample.

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  - When someone refuses to respond to a question or is unavailable.
  - How are missing values handled? As n/a? As 0?
- **Loaded question**
  - A question worded in order to mislead or elicit a desired response.

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(1)   "Should the fire department receive additional funding for new equipment?"

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Statement (2) is a loaded question.