Intro to Survey Design and Issues

Sampling methods and tips
Making Inferences

- What is a population? All the cases for some given area or phenomenon. One can conduct a census of an entire population, as the US government attempts to do.

- In reality though, the US actually acquires a sample through the census every ten years. What is the difference?
Making Inferences

- Inferences are when we examine a sample to gauge the parameters of a broader population.

- Why would we do this and when is it valid?

- Taking only a sample of data from a population becomes necessary as a feasibility/cost issue.
Avoiding Biased samples

- A sample is valid when it reflects the population from which it is drawn.

- The central limit theorem has been proven to show that the larger the sample relative to the population from which it is drawn, the more it will reflect the parameter of the population.

- Hence, by definition larger samples are more likely to be accurate than smaller samples.
Sampling Methods (Frame) and bias

- *Probability sampling* requires that subjects/cases are chosen at random, each having an equal chance of being chosen. Thus, bias should be minimized.

- Ideally, this is the method that should be used since it would be the least susceptible to bias.
 Sampling Methods (Frame) and bias

- Nonprobability sampling is of course not random.
  - Snowballing – survey grows by contacts referring to other contacts
  - Stratified/quota – individuals chosen to artificially gain broader representation so that sample reflects broader population, but again subjects chosen non-randomly to reflect this.
Sampling Issues

The population
- Census
- True parameters

The sampling Frame
- Random
- Stratified
- Convenient
- Snowballing, etc.

The Sample

Does the sample represent the entire population?
Surveying Methods

The sample → The instrument → The data gathering method
Data

The raw data

Data Processing
Data Analysis and Findings Communication

Data Analysis

Findings Communication
Bias

- **Systematic bias** occurs, and is a huge problem, when bias is incurred directly from the manner in which a survey is collected.

  - For example, would a survey evaluating perceptions of Democrats be unbiased if conducted exclusively outside a joint meeting of Christian Evangelicals and the NRA?
Bias

- **Sampling error** may also occur, and if minimal not a problem, to the degree that we can not be sure whether we fully captured the parameter of a population.

- **Nonsampling error** results from many other problems of research design, such as poorly worded questions or non-responses of certain subjects. There is always potential error in every empirical project.
Interviews and Questioning

- Environment, demeanor, neutrality, are all necessary to gain samples of data with the least bias.

- Focus groups in particular require structure through questions in the hope of excellent qualitative data without leading those who respond to certain answers, although structure may vary: Group interview or Interactive focus group.

- The more the researcher needs specific answers to questions, the more they need to structure the session.
Questions

- Questionnaires require much skill in order to avoid error.
  - Avoiding biases of those collecting the information in types of questions.
  - Avoid value-laden or biased words that act as queues or triggers for certain political/social groups.
  - Use clear standard language but also make sure your audience understands the words. Example, asking high schools students whether they are taught civics.
Structure of Questions

- **Open v. Closed.** As with focus groups, the more you structure answer options the more you can have answers to specific questions. Open-ended questions are good for a full range of respondent views.
Additional Problems to be aware of

- **Instrumentation**: How the instrument (e.g. survey) is conducted. For example, a survey through internet will exclude those without access to such technology.

- **Selection**: Selection effects based on who is and who isn’t included in the experiment or survey. Sampling and instrumentation problems.