
36-303: Sampling, Surveys and Society

What is Sampling?

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Review Quiz

- Fill in your name.
- Answer questions on the handout.
- You have 30 minutes.

(If you are done early read through today's news articles with care.)

Handouts

- Project Ideas
- Project Schedule
- Topics Schedule
- Quiz
- Lecture Notes
 - Quiz
 - Forming Project Groups
 - Project Ideas and Class Schedule
 - What is Sampling?

Forming Project Groups

- Find people you can work with
- Use the discussion board Blackboard to find a group to join or find a person to add to your group
- Groups should be 4-5 students each
- Email brian@stat.cmu.edu with your proposed group members, by Friday at 5:00pm. ONE EMAIL PER GROUP.
- *I will assign you to a group if you do not choose.*

Project Ideas, Class Schedule

- Project Ideas
- Project Schedule
- Topics Schedule

What is Sampling?

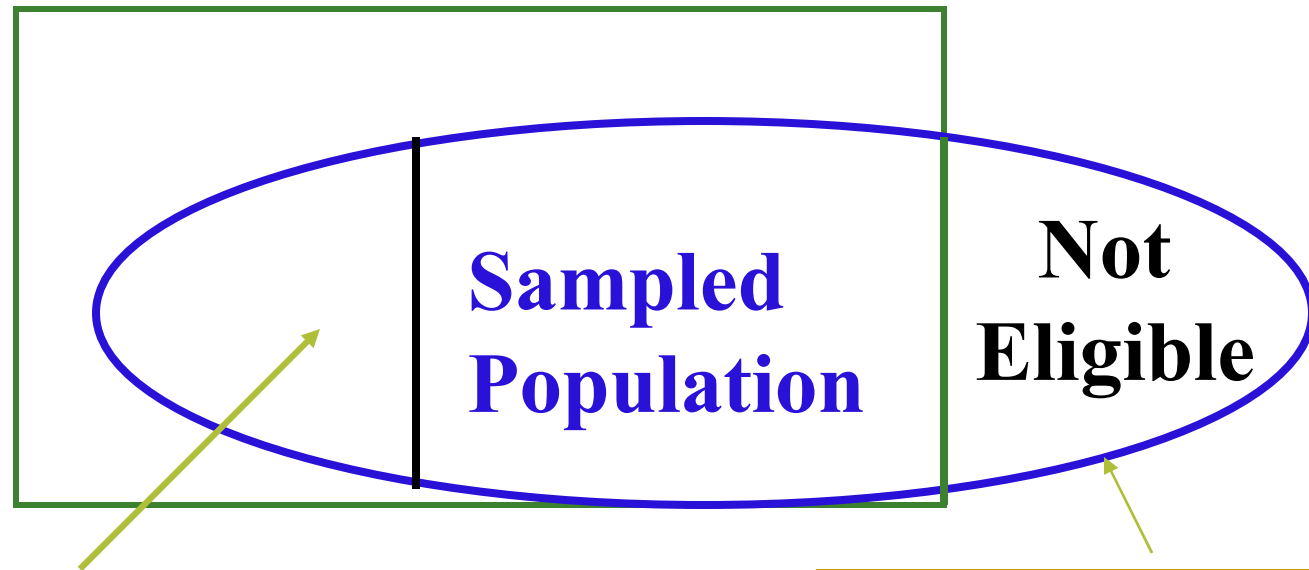
- Sampling is a statistical process of “purposefully” selecting a subset of units from a population in order to make inferences about the entire population.
 - The “best” way to select a sample is through the use of probability methods, because this gives us a basis for inference.
 - *Utah v. Evans* (2003) : When is it OK to use sampling to supplement the US Census?

Elements of a Sample

- Key elements to understanding properties of sample include:
 - ❑ *Target Population* - collection of observations we want to study (e.g. possible voters in NH).
 - ❑ *Sampled Population* – all possible observation units that might have been sampled.
 - ❑ *Sampling Frame* – list of all sampling units (e.g. list of telephone numbers).
 - ❑ *Sample* - subset of population.
 - ❑ *Sampling Unit* - unit we actually sample (e.g. household).
 - ❑ *Observational Unit* - element to be measured (e.g. individual).
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Schema

Target Population



**Refusals, Unreachable,
Incapable, etc.**

**Sampling Frame
Population**

Does Sample Represent Population?

- “Representativeness” comes from
 - (a) match between target population and sampled population.
 - (b) method for drawing sample.
- Two kinds of errors:
 - ❑ Non-sampling – *can be reduced by careful design of the survey*
 - ❑ Sampling – *can be quantified by statistics, reduced by increasing sample size*

Two Kinds of Errors

- Non-sampling errors:
 - **Selection bias** - part of target population is not in sampled population.
 - **Measurement bias** - measuring instrument has tendency to differ from true value in one direction.
- **Sampling error** - results from taking a sample instead of whole population.

Methodological Features of Examples

- What can we say about:
 - ❑ population of interest
 - ❑ frame/list
 - ❑ sampling technique
 - ❑ sample size
 - ❑ response rate
 - ❑ mode of interview
 - ❑ possible sources of selection bias and inaccuracy
 - ❑ other details on methodology relevant to inferences of interest

Summary of Today's Lecture

- Review Quiz.
- Project groups
- Project proposals
- Key elements of sampling
- What makes a sample representative?