Considering Your Sample

This project is made possible by a grant from the U.S. Institute of Museum and Library Services.

Considering Your Sample

Populations & Sampling

Types of Sampling

Sample Size

Response Rates

Total Population

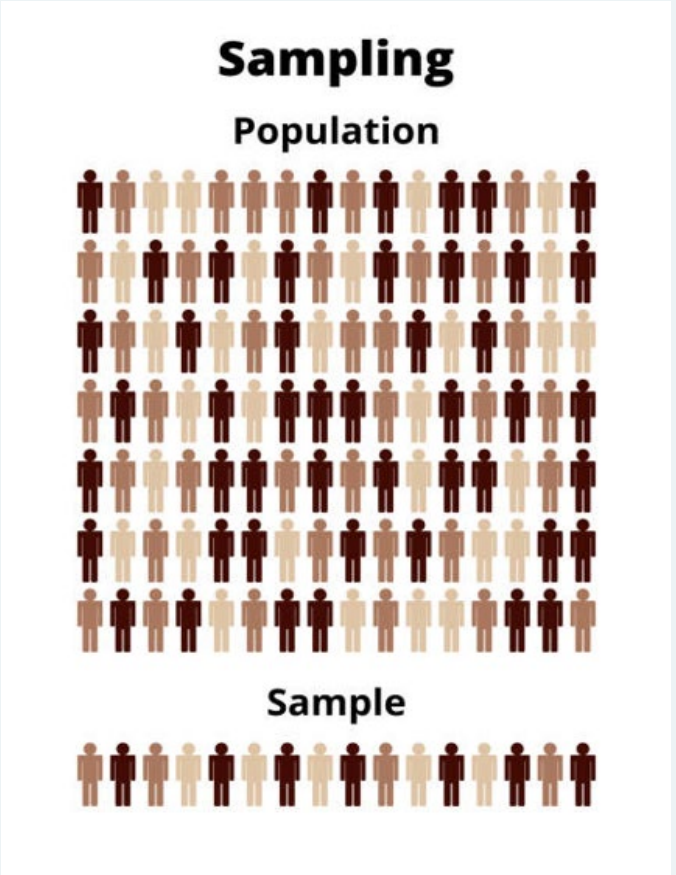
- Total of all cases that conform to a prespecified criterion
- Could be used:
  - When population is small enough to survey all
  - When diversity of population makes sampling undesirable
- Otherwise used to draw the sample from

Brophy, P. (2008). *Measuring library performance: Principles and techniques.* London: Facet Publishing.

Powell, R.R. and Connaway, L.S. (2004). *Basic research methods for librarians*. Westport: Libraries Unlimited.

Sampling

- A selection from the total population
- Sampling is necessary with large populations
- Need a *sampling frame* (a list of "units" within the sample), a source of data from which sample can be drawn
- Consider relationship between sampling frame and population
- Identify biases when evaluating results
  - Include those biases in published conclusions/limitations



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Two major types of sampling

- Random/probability
- Non-random/non-probability

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Random Sampling

- Participants are representative of all the characteristics of population as a whole
- Every member of the population has an equal, non-zero and calculable probability of being included in the assessment
- Ensure that actual respondents to an assessment are a random sample of population
  - Some sections of the population are often found to be more likely to respond (introduces bias)

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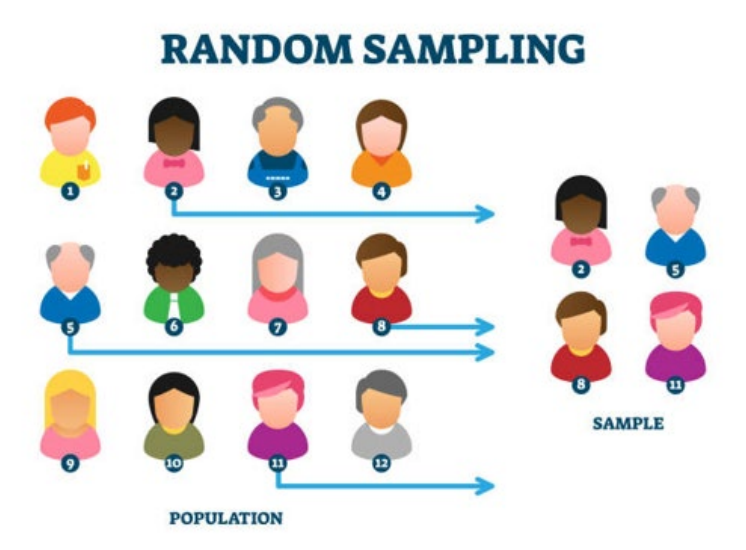
Random Sampling Methods



- Assign every member a number, then select random numbers until you reach your desired sample (use formula or random number table)
- **Systematic sampling**: start anywhere in a member list, then choose every *n*th entry until you reach your desired sample. This is not random unless the list itself is in random order.
- **Stratified random sampling**: divide the population into groups, such as by age or gender, then choose random members of each group
  - Proportionate (same percentage from each group) or disproportionate (same number from each group)
- **Cluster sampling**: divide population into clusters or groups and then drawing a sample from each cluster
  - Often used when sample frame is unavailable

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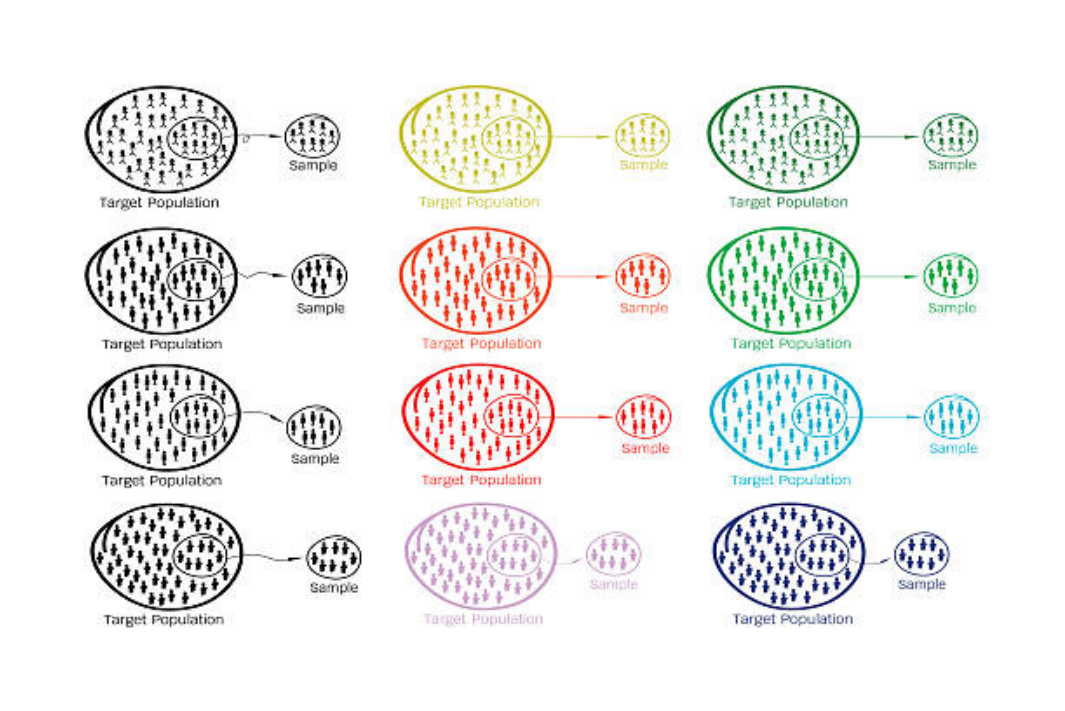
Non-Random Sampling



- Used when representativeness may not be key issue
  - Qualitative data, etc.
- Judgment is used to select respondents who are likely to have information needed

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Non-Random Sampling Methods

- Convenience/accidental/haphazard/availability sampling: people are selected because they are available (e.g., stopped and asked to participate without any attempt to define their characteristics)
- Quota sampling: an assessment practitioner decides or is told how many people with specific characteristics to sample
  - example: ten men and ten women
  - example: equal numbers of undergrad students from various departments
- Purposive sampling: an assessment practitioner deliberately select respondents based on advance knowledge of their characteristics

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Non-Random Sampling Methods

- Snowball sampling: ask participants to suggest others who may be willing to be participate
  - Useful when it's difficult to identify most appropriate members of a population
- Self-selected sampling: individuals select themselves (volunteer) for inclusion
- Incomplete sampling:
  - individuals do not participate or complete the study
  - individuals are selected from a sample frame that was incomplete

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- In general, the larger the sample, the more likely it is to be representative of the population as a whole.
  - But often there are time and resource restraints
- One important consideration is whether you are looking for a sample with statistically significant results.
  - Often, the goal is to reach a 95% confidence level
    - 95% chance that the results are as accurate within x% of what would have been found if the whole population had been surveyed
    - The value of x, the confidence interval, is calculated from the sample size and response variation
- Sample size tables (e.g., Krejcie and Morgan) are helpful tools.

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Sample Size Methods

- Consider how many participants are needed to ensure that a small number of outlier individuals won't skew the results
- One general rule is to use about 15 participants per variable (gender, age ranges), but other designs require 30 minimum or 100 minimum for surveys (see Borg and Gall, 1979; Krejcie and Morgan, 1970)
- Increase to allow for non-respondents
- Remember to pilot (i.e., test 5 to start with, improve the design and re-test 5, and repeat the process, rather than test 15 at once)

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Sample Sizes & Qualitative Research

- Purpose is to gather deep, complex, rich data in order to understand (not generalize)
- How do you know when you have enough?
  - Saturation (no new responses or nuances are uncovered)
  - Purpose of the sample (may change from the initial selection of a “first sample” and evolve from the first set)
    - Maximum variety of perspectives
    - Extreme experience of study concept
    - Intense (ongoing, multiple occasions) of study concepts
    - Snowball (initial participants lead researchers to others with shared characteristics, experiences, etc.)
- The type of study undertaken affects the sample size needed.

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- Response rates tend to be low.
  - Poor communication/distribution
  - Library anxiety
  - Survey/question fatigue
  - Inequitable/unreasonable expectations of labor
  - Lack of confidence in resulting action
- If the response rate is low, are the respondents representative of the population as a whole?
  - If not, how has this introduced bias into the results?

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