

# 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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- **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.**



- **Simple random sampling**

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- **Systematic sampling**

- Subjects are placed in some order.
- Pick a random starting value ( $n$ ).
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- Starting at  $n$ , take every  $k^{\text{th}}$  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.

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- Blind
  - Researcher knows what group (experimental vs. control) the subject is in, but the subject doesn't.
- Double-blind
  - 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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- Subjects are assigned to different groups through random selection.
- Experiments are performed on more than one subject (known as *replication*).
- The sample size is large enough to see the true nature of the effects.
- Researchers will control the effects of the variables using such techniques as blinding.

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# Errors

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- The difference between the sample result and the true population result.

- **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.

# Other Issues

- **Small sample sizes**

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- **Loaded question**



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- **Loaded question**

- A question worded in order to mislead or elicit a desired response.

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Statement (2) is a loaded question.