

Sampling and uncertainty

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A sample and a population

The population is the group that a question concerns. A sample is the part of that group that is actually observed.

A survey of weekday visitors does not automatically describe people who only visit at weekends. More responses do not remove a bias in who was invited.

Variation between samples

Two samples from the same population will usually give different results. The amount of variation depends on the sample size and the spread of the measurements.

Report a result with enough context to understand how it was collected. A percentage without a denominator hides the number of observations.

Writing a careful conclusion

Separate what was measured from what is inferred. A relationship between two measurements does not show that one caused the other.

Describe limitations directly. A small local study can still be useful when the question and the limits are clear.

Key terms

Population: The entire group of interest.

Sample: The observed subset of a population.

Selection bias: A distortion caused by how observations are chosen.

Questions for review

- Why might a weekday survey miss a relevant group?
- Why does a larger sample not always fix selection bias?