



OVERVIEW

Sampling is how we study a group without surveying everyone. In this module, you'll learn how sample size and sampling methods shape the accuracy and fairness of your results. Get it right, and your data speaks for the population—get it wrong, and your conclusions could be misleading.

Key Concepts

- **Sample Size:** Affects accuracy and generalizability.
- **Sampling Methods:** Influence fairness and reliability.
- **Purpose:** Study a group without surveying everyone.
- **Statistical Significance:** Indicates whether results are real or due to chance.

Sample Size

- **Definition:** Number of participants/items included in analysis.
- **Why It Matters:**
 - Larger samples increase result accuracy (Law of Large Numbers).
 - Smaller samples may suffice for localized questions; larger populations require bigger samples.
- **Example:** Flipping a coin 3 times vs. 1,000 times (closer to 50/50 with larger trials).

Key Factors

- Larger samples detect smaller, meaningful differences.
- Magnitude of Difference: Larger differences are easier to identify.

Probability Sampling

Method	Description	Example
Simple Random	Equal chance for all members	Drawing names from a hat

Systematic Random	Select every nth person from a list	Survey every 5th person in line
Stratified Random	Divide into groups, sample each	Randomly pick from age groups
Cluster Random	Randomly select clusters (groups)	Survey patients in 3 health clinics

Non-probability Sampling

Method	Description	Example
Convenience	Sample easiest to reach individuals	Surveying people on campus at 1:30 PM (risk: excludes those absent around that time)
Voluntary Response	Participants self-select	Restaurant feedback forms (risk: over represents strong opinions)

Key Takeaways

- Use a sample size appropriate for your population and goals.
- Prioritize probability sampling for reduced bias.
- Always consider who is missing from the data.
- A representative sample reflects the population accurately.