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Q1(e)

Explain the probability sampling strategies with examples

UPSC Civil Services Mains 2019 · Sociology GS 1 · 10 marks · Sociology

Sociology - The Discipline: Modernity and social changes in Europe and emergence of sociology; Scope of the subject and comparison with other social sciences; Sociology and common sense.

Core demand of the question

- Explain the probability sampling strategies with examples
- Keep the explanation within a 10-mark length

Revision summary

- **Probability sampling:** known chance of selection and estimable error.

Simple random, systematic, stratified, cluster, and multistage PPS are the toolkit.

NFHS and **NSSO** are Indian illustrations.

A missing frame blocks the method.

Quota and snowball are not probability designs.

Introduction

Probability sampling gives every unit a known, non-zero chance of selection. It supports estimates of error. It is the design behind the **Census** sample surveys and **NFHS**, not behind a college queue.

Body**Simple random and systematic**

- **Simple random** sampling draws from a complete frame, as in a lottery of listed households.
- Systematic sampling takes every k-th unit after a random start. It fails if the list has a hidden period.

Stratified and cluster

- Stratified sampling draws within sex, region, or rural-urban strata so rare groups are not missed. **NFHS** stratifies.
- Cluster sampling draws villages or blocks first, then households. It cuts cost and raises design effect.

Multistage and PPS

- Multistage combines clusters. The Indian **NSSO** and **NFHS** use stages from region to household.
- Probability proportional to size gives large villages a higher chance, then weights restore the estimate.

Example and limit

- A voter list can frame a city ward. Informal pavement workers often have no list, so probability design needs a mapped area sample.

Flow diagram

Sampling frame -> Known chance
Known chance -> Simple random
Known chance -> Stratified
Known chance -> Cluster multistage
Cluster multistage -> NFHS NSSO NSSO

Conclusion

Simple random, systematic, stratified, cluster, and multistage PPS are the main probability strategies. **NFHS** and **NSSO** illustrate them. Without a frame, the strategy cannot start. State the chance; do not call a quota a random sample.

Facts & figures

Simple random

Each listed unit has equal chance; needs a complete frame.

Stratification

Independent draws in subgroups to control precision and coverage.

NFHS

Multistage household survey used for fertility, health, and gender indicators.

NSSO

National Sample Survey designs for work, consumption, and informal labour.