

Random Sampling Explanation



random sampling and types by probabilistic and non-probabilistic
--explain in the format of written in exam((each types has atleast 4 points))

Here's a structured exam-style answer on **random sampling and its types**, categorized into **probabilistic** and **non-probabilistic sampling methods**, with at least four key points for each type.

Random Sampling and Its Types

Sampling is the process of selecting a subset of individuals from a population to estimate characteristics of the whole population.

Sampling methods are mainly classified into:

1. **Probabilistic Sampling**
 2. **Non-Probabilistic Sampling**
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1. Probabilistic Sampling

In probabilistic sampling, every member of the population has a known and non-zero chance of being selected.

a. Simple Random Sampling

- Every individual has an equal chance of being selected.
- Selection is done using random numbers or lottery method.
- It is free from classification error and easy to analyze.
- Suitable for homogeneous populations.

b. Stratified Random Sampling

- Population is divided into homogeneous subgroups (strata).
- Random samples are taken from each stratum.
- Ensures representation from each subgroup.
- Useful when the population has different characteristics.

c. Systematic Sampling

- Every k th element is selected from a list after choosing a random start.
- Easy to implement and time-saving.

- Can introduce bias if there's a hidden pattern.
- Requires an ordered population list.

d. Cluster Sampling

- Population is divided into clusters (usually geographically).
 - Random clusters are selected and all units in them are studied.
 - Cost-effective and convenient for large, scattered populations.
 - Less accurate than stratified sampling if clusters are not homogeneous.
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2. Non-Probabilistic Sampling

In non-probabilistic sampling, not all individuals have a known or equal chance of being selected.

a. Convenience Sampling

- Samples are taken from a group that is easy to access.
- Quick, easy, and inexpensive.
- High risk of bias and low generalizability.
- Often used in pilot studies.

b. Judgmental or Purposive Sampling

- Researcher selects samples based on their knowledge and purpose of the study.
- Useful in expert opinion surveys.
- High risk of researcher bias.
- Not suitable for generalizing results.

c. Snowball Sampling

- Existing subjects recruit future subjects among their acquaintances.
- Commonly used in hard-to-reach or hidden populations.
- Useful when a sampling frame is not available.
- Risk of sample being unrepresentative due to network bias.

d. Quota Sampling

- Population is segmented, and a quota is set for each segment.
 - Samples are selected until the quota is met.
 - Ensures representation of key groups.
 - Selection within quota is non-random, leading to bias.
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Conclusion:

Choosing the correct sampling method depends on the research objectives, population structure, resources, and required accuracy. Probabilistic methods offer more scientific accuracy, whereas non-probabilistic methods are more convenient but less reliable.

Let me know if you'd like a handwritten-style version or need this in a table format for revision.