

Class: MSc

Subject : Research Methodology

Sampling and Sampling Design

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Population or Universe

A comprehensive group or entire collection of all the entities, individuals or instances of subjects, objects, events, or phenomenon under study having common characteristics with measurable value that are the interest of a researcher.

The totality about which the inferences are to be drawn or generalizations to be made.

Census

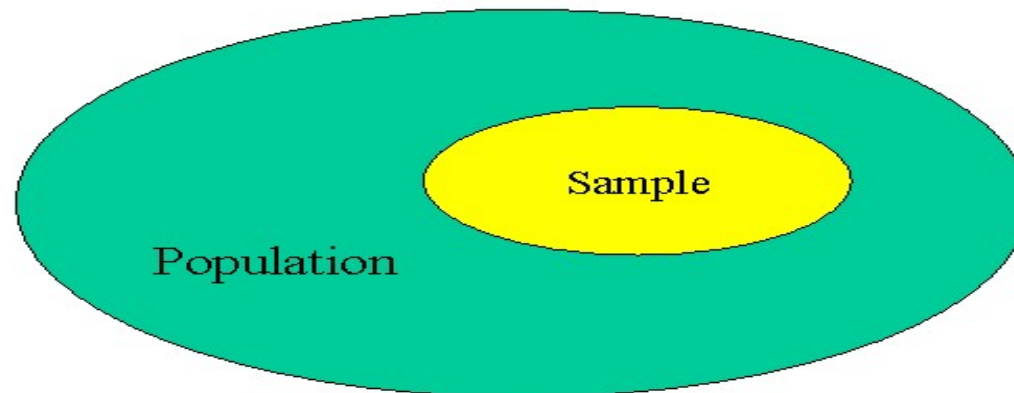
Census is a process when the entire population is observed and facts are collected from each individual unit or entity comprising the population.

Why Samples?

- Generally, the population is too large to study.
- The complete enumeration is time consuming and incurs huge costs.
- Therefore, Samples are used to acquire data and draw conclusions about entire population.

Sample

Sample is the part of population or totality that researcher actually examines to gather data which in turn is analyzed for understanding any aspect or characteristics of population.



Sampling

- The process of inferring something about a large group of elements, population on the basis of studying only part of it, is called as Sampling.

Types of population

- Finite population - It is possible to observe every member of the population and record the observation. The size of population is N .
- Infinite population – In practice, a population is considered as infinite if it involves an ongoing process that makes listing or counting every element in the population impossible.

Sample Design

- Sample design is a definite plan for obtaining a sample from given population.
- It refers to the technique the researcher adopts in selecting items for the sample.

- A sample needs to be selected carefully because it should be representative of the general population.
- Before collecting the sample, it is important that the population is defined carefully and completely, including a description of the members to be included.

- Sample size - number of items to be selected from the population to constitute a sample. It should neither be excessively large nor too small.
- Optimum sample size is the one which fulfils the requirements of efficiency, representativeness, reliability and flexibility.

Types of Sampling

Sampling may be of two types.

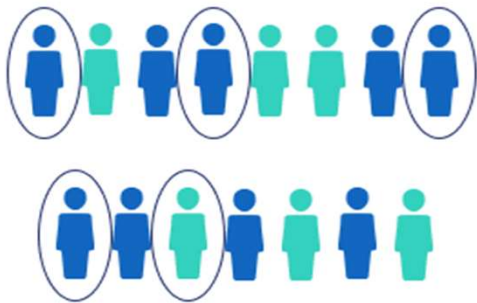
Probability Sampling and
Non- Probability Sampling

Probability Sampling

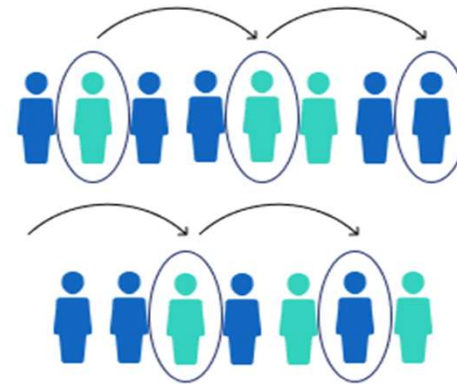
- Every member of the population has a calculable non-zero probability - equal or unequal of getting included in the sample.
- It is the back bone of quantitative research.

Probability Sampling Methods

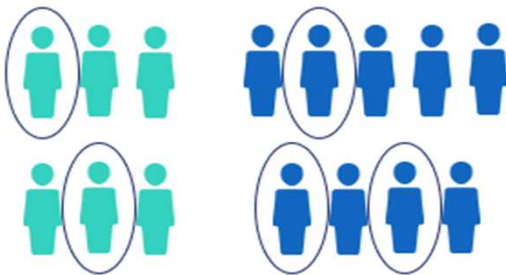
Simple random sample



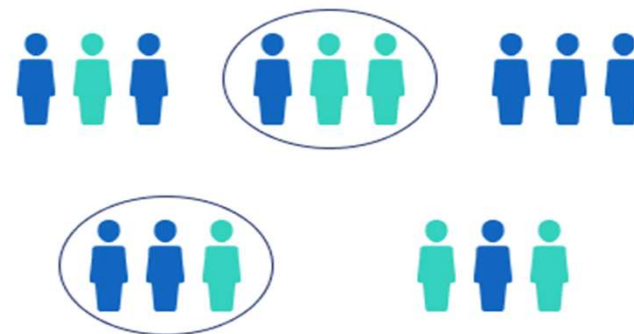
Systematic sample



Stratified sample



Cluster sample



Probability Sampling Methods

- Simple Random Sampling - Every member of the population has an equal chance of being selected. To conduct this type of sampling, tools like random number generators are employed.
- Systematic Sampling - Every member of the population is listed with a number, but instead of randomly generating numbers, individuals are chosen at regular intervals.

Probability Sampling Methods

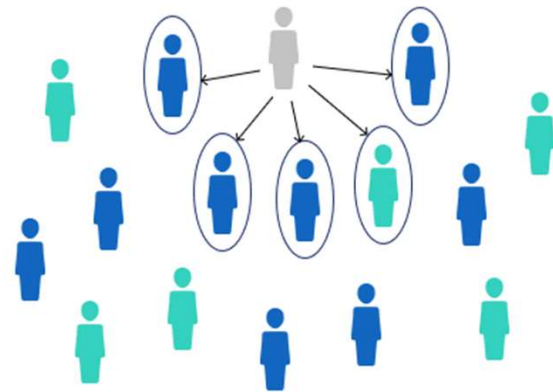
- Stratified Sampling - It involves dividing the population into subgroups or Strata that may differ in important ways. It allows you draw more precise conclusions by ensuring that every subgroup is properly represented in the sample.
- Cluster Sampling – It involves dividing the population into subgroups, having similar characteristics. Instead of sampling individuals from each subgroup, entire subgroups are selected randomly.

Non- Probability Sampling

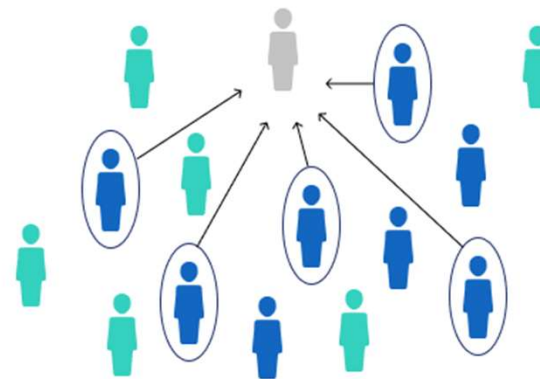
- It does not assure any non-zero probability of getting an element included in the sample.
- Items for study are selected deliberately by the researcher.
- It is used in qualitative research.

Non-Probability Sampling

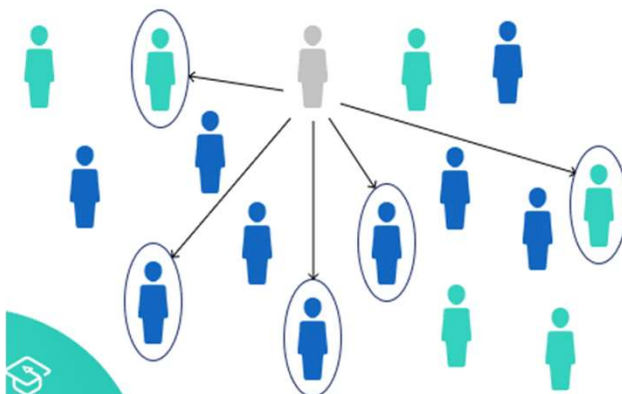
Convenience sample



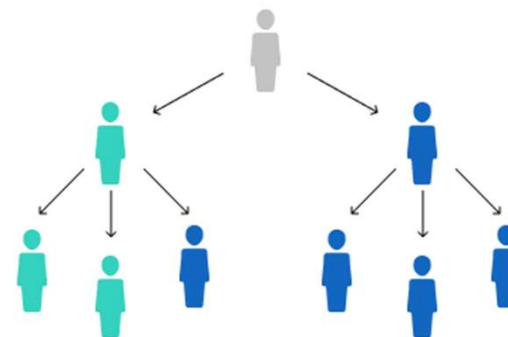
Voluntary response sample



Purposive sample



Snowball sample



Non-Probability Sampling Methods

- Convenience Sampling - A convenience sample simply includes the individuals who happen to be most accessible to the researcher.

This is an easy and inexpensive way to gather initial data, but there is no way to tell if the sample is representative of the population, so it can't produce generalizable results.

Non-Probability Sampling Methods

- Voluntary Response Sampling - a voluntary response sample is mainly based on ease of access. Instead of the researcher choosing participants and directly contacting them, people volunteer themselves

Non-Probability Sampling Methods

- Purposive Sampling or Judgement Sampling – It involves the researcher using their expertise to select a sample that is most useful to the purposes of the research.

It is often used in where the researcher wants to gain detailed knowledge about a specific phenomenon rather than make statistical inferences, or where the population is very small and specific. An effective purposive sample must have clear criteria and rationale for inclusion.

Non-Probability Sampling Methods

- Snowball sampling

If the population is hard to access, snowball sampling can be used to recruit participants via other participants. The number of people you have access to “snowballs” as you get in contact with more people.

Random Sampling

- A sample of objects drawn from a population is a random sample if it is selected by a process in which every member of population has essentially the same chance of being chosen.

Random Sampling from finite population

- A simple random sample of size n from a finite population of size N is a sample selected such that each possible sample of size n has the same probability of being selected.

Random Sampling from infinite population

- A simple random sample of size n from a infinite population is a sample selected such that each element selected comes from population and each element is selected independently.

Thanks!!!