M.A. Semester I
CC-4 Research Methodology and Statistics

Unit III ***Sample and Sampling Techniques***

(a) Sample – Meaning, characteristics of a good/scientific sample

(b) Sampling techniques – Probability sampling - meaning and types

Non-probability sampling - meaning and types

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Sample – Meaning, characteristics of a good/scientific sample

Unit III (a)
Sample – Meaning, characteristics of a good/scientific sample

Population:

- **In research terminology the Population can be explained as a comprehensive group of individuals, institutions, objects and so forth which have common characteristics that are of interest to a researcher**

  Suppose a researcher proposed to conduct a study on awareness and use of ICT among the secondary school teachers in Bihar, then the entire secondary school teaching community in Bihar will constitute as the population of the study.

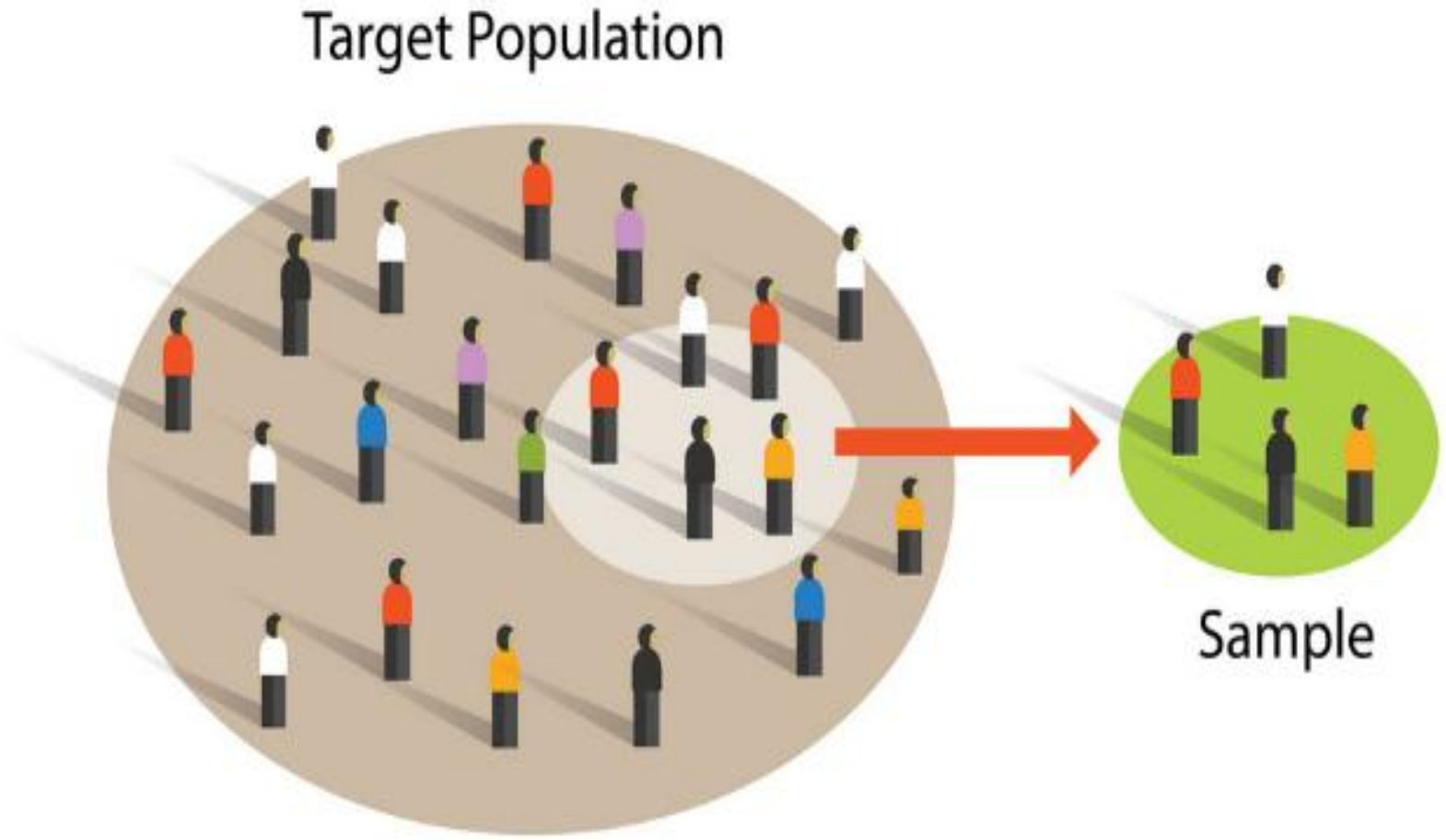
- **A population is any large collection of objects or individuals, such as Indians, students, or trees about which information is desired.**
- **Population consists of all the objects or events of a certain type about which researchers seek knowledge or information**

- **A population might be broad in scope (e.g., adult males living in the United States) or narrow (e.g., blog postings in the first 24 hours after a significant event)**
- **Even when a population consists of a relatively small number of objects or events, it is often impractical or impossible to gather data about each member of the population**
- **Instead, researchers select a subset of the population, called a *sample*, which is a manageable size for observation. From their observations about the sample, researchers make generalizations about the population from which the sample was chosen**

Types of Population

- ***Finite Population*** **- The finite population is also known as a countable population in which the population can be counted. In other words, it is defined as the population of all the individuals or objects that are finite. For statistical analysis, the finite population is more advantageous than the infinite population. Examples of finite populations are employees of a company, potential consumer in a market.**
- ***Infinite Population*** **- The infinite population is also known as an uncountable population in which the counting of units in the population is not possible. Example of an infinite population is the number of germs in the patient's body is uncountable.**
- ***Existent Population*** **- The existing population is defined as the population of concrete individuals. In other words, the population whose unit is available in solid form is known as existent population. Examples are books, students etc.**
- **Hypothetical Population - The population in which whose unit is not available in solid form is known as the hypothetical population. A population consists of sets of observations, objects etc that are all something in common. In some situations, the populations are only hypothetical. Examples are an outcome of rolling the dice, the outcome of tossing a coin.**

Sample



Sample

- A sample is a representative group drawn from the population
- A sample is defined as a smaller set of data that a researcher chooses or selects from a larger population by using a pre-defined selection method
- In social science and educational research, practically it is not possible for a researcher to approach all the individuals/elements in a population for the purpose of data collection. Instead they select and approach a representative group of individuals/elements who falls under the particular population to collect needed information regarding the group. Based on the results, the researcher generalizes the characteristics of the representative group as the characteristics of population. These 2 small groups or representative group from a population is called a sample
- In research terms a sample is a group of people, objects, or items that are taken from a larger population for measurement. The sample should be representative of the population to ensure that we can generalize the findings from the research sample to the population as a whole.

Characteristics of a Good Sample

1) **Goal-oriented: A sample design should be goal oriented. It means it should be oriented to the research objectives and fitted to the survey conditions.**

2) **Accurate representative of the universe: A sample should be an accurate representative of the universe from which it is taken. There are different methods for selecting a sample. It will be truly representative only when it represents all types of units or groups in the total population in fair proportions. In brief, sample should be selected carefully as improper sampling is a source of error in the survey.**

3) **Proportional: A sample should be proportional. It should be large enough to represent the universe properly. The sample size should be sufficiently large to provide statistical stability or reliability. The sample size should give accuracy required for the purpose of particular study.**

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4) **Random selection: A sample should be selected at random. This means that any item in the group has a full and equal chance of being selected and included in the sample. This makes the selected sample truly representative in character.**

5) **Economical: A sample should be economical. The objectives of the survey should be achieved with minimum cost and effort.**

6) **Practical: A sample design should be practical. The sample design should be simple i.e. it should be capable of being understood and followed in the fieldwork.**

7) **Actual information provider: A sample should be designed so as to provide actual information required for the study and also provide an adequate basis for the measurement of its own reliability.**

In brief, a good sample should be truly representative in character. It should be selected at random and should be adequately proportional.

Difference between Population and Sample

Some of the key differences between population and sample are clearly given below:

Comparison	Population	Sample
Meaning	Collection of all the units or elements that possess common characteristics	A subgroup of the members of the population
Includes	Each and every element of a group	Only includes a handful of units of population
Characteristics	Parameter	Statistic
Data Collection	Complete enumeration or census	Sampling or sample survey
Focus on	Identification of the characteristics	Making inferences about the population

Points to be Remembered

Population	A comprehensive group of individuals, institutions, objects having common characteristics that are the interest of a researcher.
Sample	Representative group of individuals/elements from a particular population
Sampling	Process of drawing a representative group of individuals/elements from a particular population
Sampling Error	The variation between the means of sample groups as well as population means is called sampling error
Random Sampling Techniques	Probability of each element in the population is ensured for being selected as sample unit for the study (Randomization)
Non-Random Sampling Techniques	Researchers select the samples from the population without randomization. Probability is not ensured.

References

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