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CHAPTER – 3

CENSUS AND SAMPLING METHOD OF COLLECTION OF DATA

CENSUS AND SAMPLE SURVEYS

Every individual who is using the statistical technique is required to collect information. There are two method of survey to collect data: -

- 1. Census Method / Census Survey**
- 2. Sample Method/ Sample Survey**

Difference between Population and Sample Survey

The term Population and universe means the inclusion of all the items in the field of statistical enquiry and sample means the selection of few items as representative of all the items.

Sample Survey

Sample method is that method in which data is collected about the sample on a group of items taken from the population for examination and conclusions are drawn on their basis. The result obtained by sample study can be applied to the whole universe or population.

METHOD OF SAMPLING

Various methods of sampling can be grouped under two main heads:

a) Random Sampling and b) Non Random Sampling

RANDOM SAMPLING

Random Sampling is one where the individual units (Sample) are selected at random. It is called as Probability Sampling.

1. Simple or unrestricted Random Sampling

This method is also known as simple random sampling. In this method the selection of item is not determined by the investigator but the process used to select the terms of the sample decides the chance of selection. Each item of the universe has an equal chance of being included in the sample. It is free from discrimination and human judgment. There are two methods of obtaining Simple Random sample.

a) Lottery Method b) Table of Random numbers

a) Lottery Method- In this method paper slip are made for each item of the universe. These slips are mixed in a bowl and then, impartially, some of the slips are drawn to form sample of the universe. All slips must identical in shape, size and colour to avoid the biased selection.

b) Table of Random Numbers: If the population size is very large the lottery method is time consuming. Therefore, there has been a marked tendency to use tables of random digit for the purpose of drawing such a samples. A table of random digit is simply a table of digits which have been generated by a random process. Tippet's table of random number is the most popular which can used in taking out sample.

Merit

- 1. This method is free from personal bias of the investigator**
- 2. Each and every item of the universe stand equal chances of being selected.**
- 3. This method saves time, money and labour in investigating a**

population.

Demerits

- 1. This requires complete list of population but up-to-date list are not available in many enquiries.**
- 2. If the size of the sample is small, then it will not be a representative of a population.**
- 3. The numbering of units and the preparation of the slip is quite time consuming and not economical particularly if the population is large.**

2. Restricted Random Sampling

(i) Stratified Random Sampling

This method of sampling is generally adopted when the population consist of different group with different characteristics. According to this method of sampling population is divided into different strata or homogeneous group, so that entire population get represented. This method is useful when the Population of the universe is not fully homogeneous.

There are different types of stratified sampling

a) Proportional Stratified Sampling

It is the one in which the items are taken from each stratum or layer in the proportion of their units of the stratum to the total population.

b) Disproportionate stratified Sampling

It is the one in which units in equal numbers are taken from each stratum irrespective of its size.

c) Stratified weighted sampling

It is one where units are taken in equal number from each stratum, but weights to different strata on the given basis of their size.

Merit

- 1. This method covers diverse characteristics of the population.**
- 2. On the basis of diverse characteristics of the population, a comparative analysis of data becomes possible.**
- 3. It ensures greater accuracy as each group is so formed that it consists of uniform or homogeneous items.**

Demerits

- 1. There is possibility of bias at the time of classification of the Population into different strata.**
- 2. When the size of population is already small, it may be difficult to further divide it into smaller parts / strata.**
- 3. Stratified Sampling is not possible unless some information concerning the population and its strata is available.**

(ii) Systematic or quasi-random sampling

This is used when a complete list of population is available in order e.g. alphabetical order. This method consists of selecting every n^{th} item from the list. i.e. 15th, 25th, 35th so on.

Merits

- 1. It is a systematic, simple, and convenient and checking can be done quickly.**
- 2. In this method time and work is reduced much.**
- 3. There is hardly any possibility of personal bias in this method.**

Demerits

- 1. If the universe is arranged in wrong manner the result will be misleading.**
- 2. It is feasible only if the units are systematically managed.**
- 3. Every items in the population does not get equal chances of being selected.**

(iii) Cluster sampling or multi- Stage Sampling

In this method sampling is carried out in number of stages. This is done when we know that for getting reliable results we have to divide and sub-divide a universe according to its characteristics.

3. Non-Random Sampling

Non Random sampling is done on the basis of convenience and Judgment of the investigator and not on the basis of probability as against random sampling. Thus non-random sampling is not free; it is determined by certain consideration. The following are some important methods of non- random sampling

a) Judgment or purposive sampling

b) Quota Sampling

c) Convenience Sampling

a) Judgment or purposive sampling

It is also called as deliberate sampling. In this method individual items of sampling are selected by Investigator consciously using his judgment. The choice of samples will vary from one investigator to another.

Merits

- 1. This method is flexible to allow the inclusion of those items in the sample which are of special significance.**
- 2. It is a very simple technique of selection of the sample item.**

Demerits

- 1. There is a possibility of personal bias in the selection of item.**

2. Because of the possibility of personal bias, reliability of the results becomes doubtful.

b) Quota sampling

In this method, interviewer are allotted different quota of the universe and they are required to interview a certain number of quota. Quota is decided on the basis of the proportion of persons in various Categories, i.e. upper, middle and lower income group.

Demerits

It is a kind of judgment sampling and provides satisfactory results only when interviewer are carefully trained and personal prejudice is kept out of the process of selection.

Convenience Sampling

In this method, Sampling is done by investigator in such a manner that suits his convenience.

Advantage of Sampling

- 1. Sampling Very useful in getting quick result.**
- 2. It is cheaper because of the less effort involved in it.**
- 3. Sampling is in some ways more reliable than census.**
- 4. In this method it is possible to check the extent of error.**
- 5. This sample method is generally used to check accuracy of data collected by census method.**