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# What is Sampling

The process of selecting observation is called sampling. Although sampling can mean any procedure for selecting units of observation.

According to Parten, “Sampling method is the process or method of drawing a definite number of individuals, cases or observations from a particular universe, selecting part of a total group for investigation.”

Therefore we can say that sampling is taking any portion of a population or universe, as representative of that population or universe.

# What is Sample

“A sample as the name implies is the smaller representation of a larger whole” : ***Goode and Hatt***

According to ***P.V. Young*** “A statistical sample is a miniature picture or cross-section of the entire group or aggregate from which the sample is taken.”

Therefore, In research terms a sample refers to a smaller, organizeable version of a larger group. It is a subset containing the features of a larger population. They are used in statistical testing when population magnitude are too large for the enquire to include all possible members or observations.

***Population:*** A population or universe is the aggregate of all the cases that conform to some designated set of specifications. Broadly, it is divided into two categories:-

(a) Real or Finite population

(b) Hypothetical and Infinite population

## **Ideal Sample size:**

An optimum sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. It should be small enough to avoid unnecessary expense and large enough to avoid intolerable sampling error in research.

In a social science research, sample survey method is very useful and important as it accomplish two major objectives of research:

- (a) The estimation of population parameters.
- (b) The investigation of statistical hypothesis about the population.

# Types of Sampling

A social researcher uses different kinds of sampling methods in his research. On the basis of probability theory a researcher can categorize them into two major groups:

(a) **Probability Sampling:** All large-scale surveys use this method. It utilizes random sampling techniques to create a sample. This group of sampling methods give all the members of a population equal chances of being selected. Some important kinds of probability sampling are as follows:-

(1) **Simple Random Sampling:** A type of probability sampling in which the units composing a population are assigned numbers. A set of random numbers is then generated, and the units having those numbers are included in the sample. It is the basic sampling method assumed in the statistical computations of social research. Main techniques of Random Sampling are –

(1.a) Lottery Method/ Card Method

(1.b) Use of random number table/ Tippett Method

(1.c) Grid method

(2) **Systematic Sampling:** In this method, every *nth* element in the total list is chosen (systematically) for inclusion in the sample. If the list contained 1000 elements and you wanted a sample of 100. you would select every tenth element for your sample. Therefore, the formula to find the *n*th element is:

$$\text{nth element} = \text{total elements in list/wanted sample}$$

To ensure against any possible human bias in using this method, you should select the first element at random. So, in the above example, you would begin by selecting a random number between one and ten. The element having that number is included in the sample, add every tenth element following it. This method is technically referred to as a systematic sample with a random start.

(3) **Stratified Random Sampling:** Stratified Random Sampling is a method for obtaining a greater degree of representativeness in comparison to the above two methods by decreasing the probable sampling error. It is a method of sampling that involves the separation of a population into smaller sub-groups known as strata or classes. These strata are formed based on members shared characteristics or attributes.

(4) **Cluster Sampling:** This sampling method is used when the units of the population are not very accurate to collect the sample and it is easy to divide them in clusters or separate groups . It is a multi-stage sampling in which natural groups (clusters) are sampled initially, with the members of each selected group being sub sampled afterward.

(b) **Non-probability Sampling:** In non-probability Sampling there is no way of estimating the probability that each element has of being included in the sample, and no assurance that every element has some chance of being included. Some of the important techniques of non-probability sampling are as follows:

(1) **Purposive or Judgmental Sampling:** Purposive selection denotes the method of selecting a number of groups of units in such a way that the selected groups together yield as nearly as possible the same averages or proportions as the totality with respect to those characteristics which are already a matter of statistical knowledge. In this method the units to be observed are selected on the basis of the researcher's judgment about which ones will be the most useful or representative. Therefore, it is called judgment sampling.

(2) **Quota Sampling:** A type of Non-probability sampling in which units are selected into a sample on the basis of pre-specified characteristics, so that the total sample will have the same distribution of characteristics assumed to exist in the population being studied.

Like probability sampling , quota sampling addresses the issue of representativeness, although the two methods approach the issue quite differently.

(3) **Accidental or Convenience Sampling:** As the name suggests, in this technique the sample is chosen on the basis of the convenience of the researcher. This method is very useful when the population is unclear and there is a shortage of time and money.

(4) **Snowball Sampling:** This procedure is appropriate when the members of a special population might be hard to find. Such as homeless individuals, study on working prostitutes or undocumented immigrants. In this method, the researcher collects data on the few members of the participants and then asks those participants to provide the information needed to locate other members of that population whom they happen to know. 'snowball' refers to the process of accumulation as each located subjects suggests other subjects.



# Advantages of Sampling Method

- The application of sampling in research is definitely time saving and become less expensive for the researcher, because we have not to collect all data.
  - Researcher can do more intensive study and focuses on each and every aspect of the research.
  - Sampling techniques is also good for the administrators and planners.
  - If sample is taken judiciously, the results are very reliable and accurate.
  - It is specially used for infinite, hypothetical and perishable universes so the results are become more and more accurate.
  - To study a whole universe in order to arrive at generalizations would be impractical. So, the process of sampling makes it possible by studying the variables within a relatively small portion of the universe.
- According to Rosander, “If carefully designed, the sample is not only considerably cheaper, but may give results which are just accurate and sometimes more accurate than those of census.”

# Disadvantages of Sampling Method

- The serious limitation of the sampling method is that it involves biased selection and thereby leads us to draw erroneous conclusions.
- Difficulty in selecting a truly representative sample produces reliable and accurate results only when they are representative of the whole group.
- Use of sampling method requires adequate subject specific knowledge. When the researcher lacks specialized knowledge in sampling, he may commit serious mistakes. Consequently, the results of study will be misleading.
- When the units of the population are not homogeneous, the sampling technique will be unscientific. The units of sample may be widely dispersed

**Sampling Error:** The degree of error to be expected in probability sampling. In other words, probability theory enables us to estimate the sampling error. This formula contains three factors: the parameter, the sample size, and the standard error.