



Types of Sampling

1. Definition of Sampling:

A researcher has a question or set of questions that wants to answer. For example, if the researcher would like to know the information technology needs of University students in India, she would have to identify the 'population'. In this case, the population would be all 'university students' at in India. This illustrates a basic problem that all researcher' have to face in their research project. There are hundreds of thousands of 'university students' in India? Clearly, the researcher cannot study every university students in India. This is where sampling comes into the research process.

Sampling can be defined as "... the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Trachoma, 2006, n.p.)." It is possible therefore to use sampling techniques to select a smaller group - or sample - from the population that will statistically represent the whole population. It is often necessary to use sampling because researchers usually do not have the time, energy, money or resources to study the whole population.

2. Types of Sampling:

Prior to examining the various types of sampling method, it is worth noting what is meant by sampling, along with reasons why researchers are likely to select a sample. Taking a subset from chosen sampling frame or entire population is called sampling. Sampling can be used to make inference about a population or to make generalization in relation to existing theory. In essence, this depends on choice of sampling technique.

In general, sampling techniques can be divided into two types:

- Probability or random sampling
- Non- probability or non- random sampling

2.1. Probability Sampling: Probability sampling is also known as 'random sampling this is a sampling which permits every single item from the universe to have an equal chance of presence in the sample. For instance in a raffle draw were individual units will be picked from the overall group not a deliberately nonetheless by certain process, this incident is only a blind of chance that will limits whether unique items or the additional items is to be preferred.

- a) **Simple random sampling:** One of the best probability sampling techniques that helps in saving time and resources, is the Simple Random Sampling method. It is a reliable method of obtaining information where every single member of a population is chosen randomly, merely by chance. Each individual has the same probability of being chosen to be a part of a sample. For example, if we have to select a sample of 300 items from a universe of 15,000 items, then we can put the names or numbers of all the 15,000 items on slips of paper and conduct a lottery.



- b) **Stratified sampling:** Stratified sampling is where the population is divided into strata (or subgroups) and a random sample is taken from each subgroup. A subgroup is a natural set of items. Subgroups might be based on company size, gender or occupation (to name but a few). Stratified sampling is often used where there is a great deal of variation within a population. Its purpose is to ensure that every stratum is adequately represented.
- c) **Cluster sampling and area sampling:** When the total area of the research is too large a better way for the researcher is to divide the area into smaller parts of the same or equal size and then select randomly from the smaller units. It is expected that the total population is to be divided into a relatively smaller number of clusters of smaller units and then some of these cluster units will be selected randomly so that they will be included in the general sampling. The clustering approach can, however, make the sampling procedure relatively easier and increase the efficiency of field work, especially in the case of personal interviews.
- d) **Systematic sampling:** In some instances the most practical way of sampling is to select every 15th name on a list, every 10th house on one side of a street and so on. Sampling of this type is known as systematic sampling. An element of randomness is usually introduced into this kind of sampling by using random numbers to pick up the unit with which to start. This procedure is useful when a sampling frame is available in the form of a list. In such a design the selection process starts by picking some random point in the list and then every n th element is selected until the desired number is secured.
- e) **Multi-stage sampling:** This is a further development of the idea of cluster sampling. This technique is meant for big inquiries extending to a considerably large geographical area like an entire country. Under multi-stage sampling the first stage may be to select large primary sampling units such as states, then districts, then towns and finally certain families within towns. If the technique of random-sampling is applied at all stages, the sampling procedure is described as multi-stage random sampling.

2.2. Uses of probability sampling: There are multiple uses of probability sampling. They are:

- a) **Reduce Sample Bias:** Using the probability sampling method, the bias in the sample derived from a population is negligible to non-existent. The selection of the sample mainly depicts the understanding and the inference of the researcher. Probability sampling leads to higher quality data collection as the sample appropriately represents the population.
- b) **Diverse Population:** When the population is vast and diverse, it is essential to have adequate representation so that the data is not skewed towards one demographic. For example, if Square would like to understand the people that could make their point-of-sale devices, a survey conducted from a sample of people across the US from different industries and socio-economic backgrounds helps.
- c) **Create an Accurate Sample:** Probability sampling helps the researchers plan and create an accurate sample. This helps to obtain well-defined data.



2.3. Non- probability sampling: Non-probability sampling is a sampling technique where the odds of any member being selected for a sample cannot be calculated. It's the opposite of probability sampling, where you can calculate the odds. In addition, probability sampling involves random selection, while non-probability sampling does not—it relies on the subjective judgement of the researcher.

- a) **Convenience sampling:** Convenience sampling is perhaps the easiest method of sampling, because participants are selected based on availability and willingness to take part. Useful results can be obtained, but the results are prone to significant bias, because those who volunteer to take part may be different from those who choose not to (volunteer bias), and the sample may not be representative of other characteristics, such as age or sex.
- b) **Quota sampling:** In stratified sampling the cost of taking random samples from individual strata is often so expensive that interviewers are simply given quota to be filled from different strata, the actual selection of items for sample being left to the interviewer's judgement. This is called quota sampling. The size of the quota for each stratum is generally proportionate to the size of that stratum in the population. Quota sampling is thus an important form of non-probability sampling. Quota samples generally happen to be judgement samples rather than random samples.
- c) **Judgement (or Purposive) Sampling:** Also known as selective, or subjective, sampling, this technique relies on the judgement of the researcher when choosing who to ask to participate. This sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe. When population elements are selected for inclusion in the sample based on the ease of access, it can be called convenience sampling. If a researcher wishes to secure data from, say, gasoline buyers, he may select a fixed number of petrol stations and may conduct interviews at these stations. This would be an example of convenience sample of gasoline buyers. At times such a procedure may give very biased results particularly when the population is not homogeneous. On the other hand, in judgement sampling the researcher's judgement is used for selecting items which he considers as representative of the population. For example, a judgement sample of college students might be taken to secure reactions to a new method of teaching. Judgement sampling is used quite frequently in qualitative research where the desire happens to be to develop hypotheses rather than to generalize to larger populations.
- d) **Snowball sampling:** This method is commonly used in social sciences when investigating hard-to-reach groups. Existing subjects are asked to nominate further subjects known to them, so the sample increases in size like a rolling snowball. For example, when carrying out a survey of risk behaviours amongst intravenous drug users, participants may be asked to nominate other users to be interviewed. Snowball sampling can be effective when a sampling frame is difficult to identify. However, by selecting friends and acquaintances of subjects already investigated, there is a significant risk of selection bias (choosing a large number of people with similar characteristics or views to the initial individual identified).



2.4. Uses of non-probability sampling: Non-probability sampling is used for the following:

- a) **Create a hypothesis:** Researchers use the non-probability sampling method to create an assumption when limited to no prior information is available. This method helps with the immediate return of data and builds a base for further research.
- b) **Exploratory research:** Researchers use this sampling technique widely when conducting qualitative research, pilot studies, or exploratory research.
- c) **Budget and time constraints:** The non-probability method when there are budget and time constraints, and some preliminary data must be collected. Since the survey design is not rigid, it is easier to pick respondents at random and have them take the survey or questionnaire.