6. Types of Sampling in Research Methodology

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6.1 Definition of Data:

Sampling is a method for choosing a portion of a population for study or analysis. Costs can be decreased, time can be saved, and outcomes' correctness can be improved. However, based on their objectives, resources, and difficulties, various fields or industries may employ various sampling techniques. We shall look at a few instances of sampling techniques used in various disciplines or industries in this post. [1] Sampling involves choosing a representative sample of the population being studied. The total population of people from which a sample could be taken is known as the target population. A sample is a subset of the participants in the study. Those who participate are referred to as "participants." The degree to which we can adapt our research findings to the target population we are interested in is referred to as generalizability. Only if the sample of participants is representative of the population is this possible. When particular groups are over or underrepresented in the sample, it is considered to be biassed. For instance, if only men are chosen or if the volunteer advertisement is placed in the Guardian, only readers of the Guardian are chosen. This restricts how far the study's conclusions may be applied to the entire population.

6.2 The Purpose of Sampling:

In psychology study, we're interested in finding out more about sizable populations of individuals that share a characteristic. The group we are interested in investigating is referred to as our "target population." The target audience for certain studies may be as vast as all people. Other study, however, may have a more narrowly defined target audience, such as teenagers, young children, or drug users. [2]
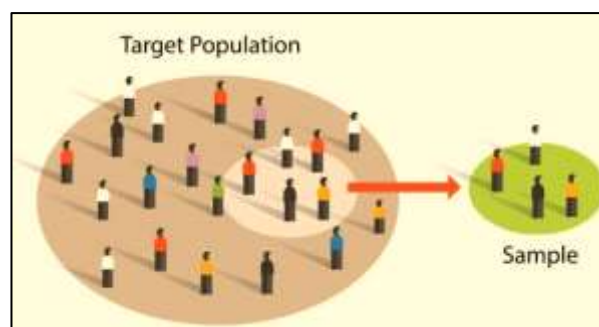
Figure 6.1: Population of Sampling

It is essentially impossible to study every member of a given community. Since this is the case, psychologists choose a sample or sub-group of the population that is probably representative of the target population we are interested in. Sampling is the process of choosing a sample from a person or from a big population for a certain type of research goal. Sampling has a variety of advantages and drawbacks. Why is sampling necessary, we could ask ourselves occasionally? The reason we utilise sampling in research studies is that it would be extremely expensive and time-consuming to poll the entire population. Figuring 6.1.

There are several sampling techniques. The one selected will be determined by a lot of variables (including time, money, etc.). [3]

Figure 6.2: Types of Sampling

A. Advantages and Disadvantages of Sampling Advantages:

Sampling is the ideal method when there is a large population since it:

- Saves time and money and produces faster findings because the sample size is smaller than the entire population;
- Produces more accurate results because it is carried out by trained and experienced investigators; and
- Sampling makes it possible to calculate sampling errors. Consequently, it helps in gathering information about various demographic features. Studying samples only needs a little amount of room and equipment, so sampling is the ideal option when resources are scarce. [4]

Chances of bias are the sampling's biggest drawback. But with so many benefits, sampling is the most effective strategy to move forward with your research. [5]

6.3 Types of Sampling:

Before we talk about the various sampling techniques, let's define the term "sample." A sample is a collection of individuals, things, or things collected from a large population for measurement in research. So sampling is done in order to obtain accurate data. [6] To examine whether all the chips in a factory are good or not, for instance, would be quite challenging. Instead, we would choose a random chip and assess its flavour, shape, and size. Therefore, sampling is a crucial research method when there is a huge population. Due of this, we have separated it into two categories: [7]

A. Probability
B. Nonprobability [Figure 6.3].

These two types of sampling are further divided into the following subtypes: [8]
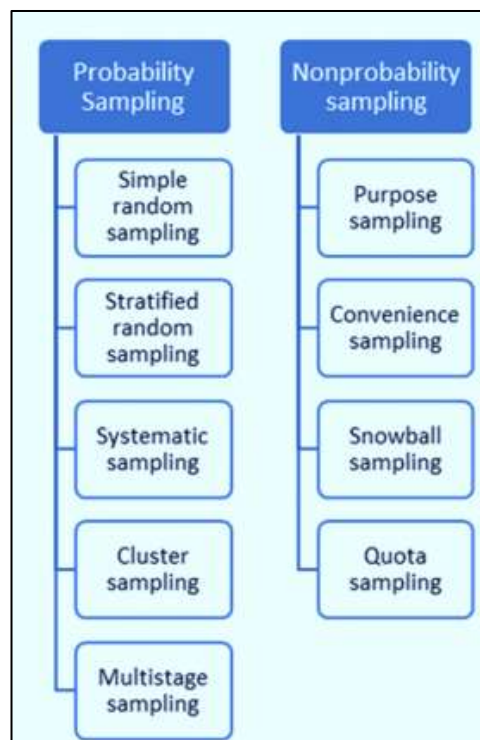

Figure 6.3: Two Types of Sampling [9]

6.3.1 Probability Sampling:

Each member of the population has a known probability of being chosen for the sample in this kind of sampling. When a population is very homogeneous, there is a good possibility that each person will be chosen for a sample. [10] For instance, if we wanted to choose some rice from a bag of rice, there is a good likelihood that each grain would be chosen. As a result, the sample taken will be an accurate representation of the entire rice bag. [11]

Every member of the population has a possibility of getting chosen when sampling using probability. Mostly quantitative research uses it. Probability sampling techniques are the best option if you wish to generate findings that are inclusive of the entire population.

There are four main types of probability sample.
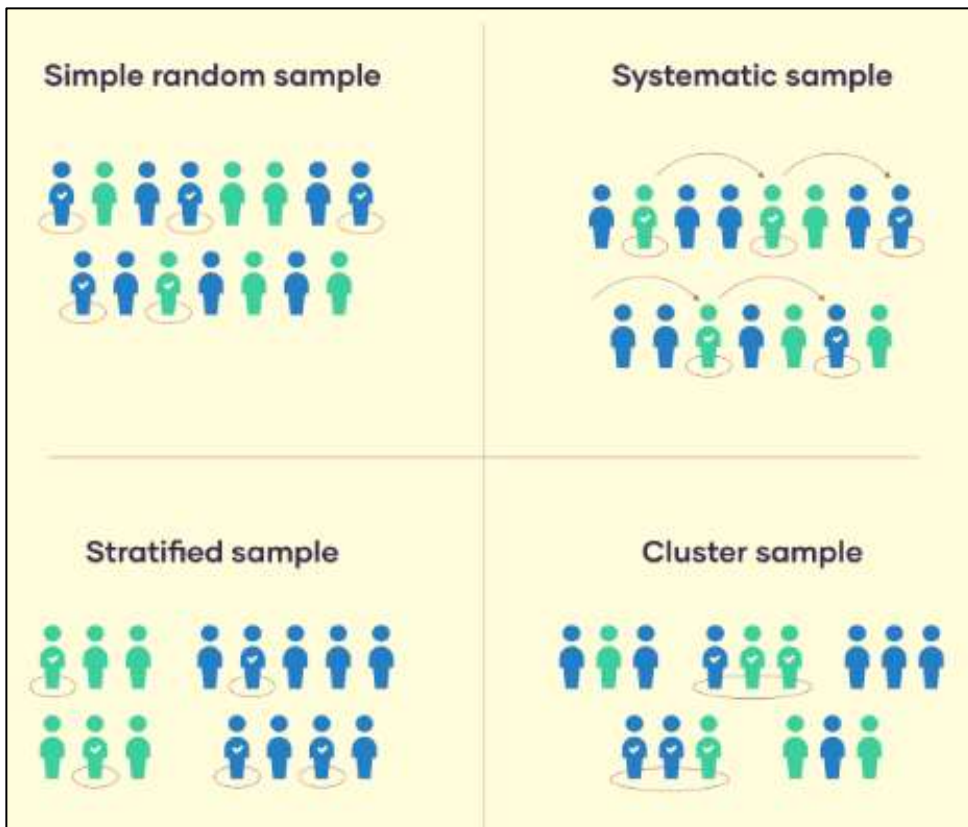
Figure 6.4: Types of Probability Sampling

A. Simple Random Sampling:

Every person in the population has an equal probability of getting chosen in a simple random sampling. The entire population should be included in your sampling frame.

You might utilise instruments like random number generators or other methods that just rely on chance to carry out this kind of sampling.

B. Systematic Sampling:

Simple random sample and systematic sampling are comparable, but systematic sampling is typically a little simpler to carry out. Every person in the population is assigned a number, but instead of assigning numbers at random, people are picked at predetermined intervals.

C. Stratified Sampling:

Stratified sampling entails breaking the population up into smaller groups that might have significant differences. By ensuring that each subgroup is fairly represented in the sample, it enables you to reach more accurate findings.

By dividing the population into strata according to the pertinent attribute (such as gender identity, age range, economic bracket, or job position), you can apply this sampling technique.

D. Cluster Sampling:

The population is also divided into smaller groups for cluster sampling, although each smaller group should share traits with the larger sample. You choose complete subgroups at random rather than picking a representative sample of each subgroup. You could, if it is practically feasible, include each and every member of each sampled cluster. You can also sample people from each cluster using one of the aforementioned methods if the clusters are large. Multistage sampling is the name for this. [12]

6.3.2 Non-Probability Sampling:

Non-probability sampling is a form in which the sample participants are chosen from the population at a non-random process. In contrast to random selection, non-probability sampling allows the sample to be chosen based on convenience, accessibility, or other variables. Because non-probability sampling cannot be guaranteed to be representative of the population, it is often seen as being less trustworthy and unbiased than probability sampling. [13]

Some common sampling methods for non-probability sampling include:

A. Convenience Sampling:

This approach entails choosing a sample based on practicality or accessibility. Instead of choosing a random sample from the population, a researcher can, for instance, select a sample of volunteers from a neighbouring community or a convenient area. When you want to receive as many responses as possible immediately, you typically do it. Typically, convenience samples favour participants who concur with your study question. Among other things, polling friends and family. [14]

B. Judgement Sampling:

A non-probability sampling technique called judgement sampling selects the sample based on the researcher's knowledge or judgement. In judgement sampling, the researcher chooses a sample they feel to be representative of the population based on their knowledge and experience. When it is difficult or impossible to randomly sample the population, or when the researcher has specialized knowledge that enables them to choose a representative

sample, this method is frequently utilized. [15] However, because judgement sampling is not certain to be representative of the population, it is typically seen as less trustworthy and less unbiased than probability sampling. For instance, depending on their concerns from the last audit, an auditor chooses a sample. [16]

An approach known as "judgmental sampling," in which specific situations, people, or events are purposefully chosen in order to convey crucial information that cannot be learned from other options, is known as "purposeful sampling." When a researcher feels that certain cases or volunteers should be included in the sample, they will include them.

The advantages and disadvantages of each sampling technique are shown in Table 6.1. [17]

Table 6.1: Strengths and Weaknesses of Sampling Techniques [18]

Technique	Strength	Weaknesses
Convenience sapling	Least expensive, least time consuming most convenient	Selection bias, sample not representative, not recommended by descriptive or casual research
Judgement sapling	Low cost, convenient, not time-consuming, idle for exploratory research design	Does not allow generalization subjective
Quota Sapling	Sample can control for certain characteristics	Selection bias or assurance
Snowball sapling	Can estimate rare characteristics	Time consuming
Simple random sampling	Easily understood results predictable	Difficult to contrast sampling frame expensive lower precision no assurance of representativeness
Systematic sampling	Can increase representativeness, easier to implement than simple random sampling, sampling frame not always necessary	Can decrease representativeness
Stratified sapling	Includes all important subpopulation presidents	Difficult to select relevant stratification variables, not feasible to stratify on many variables, expensive
Cluster sapling	Easy to implement cost effective	Imprecise, difficult to compute an interpret results

C. Quota Sampling:

With this approach, quotas are established for various population groupings, and a sample is chosen to meet those quotas. Usually, after identifying the target group, the researcher chooses a portion of the group at random. For instance, a university may like to survey students' opinions of its courses. They choose 200 individuals at random each year out of the approximately 1000 pupils that enroll each year.

D. Snowball Sampling:

With this approach, a small group of participants is asked to recommend more individuals who meet the study's eligibility requirements. Up until the necessary sample size is obtained, this process is repeated. When the target population is tough to reach, this technique is frequently used. [19]

6.4 Difference Between Probability Sampling and Non-Probability Sampling Methods:

Probability sampling and non-probability sampling differ primarily in the method used to choose the sample from the population. Non-probability sampling is based on non-random criteria, whereas probability sampling relies on random selection. Non-probability sampling is regarded as less trustworthy and unfair while probability sampling is seen as more trustworthy and impartial.

The various sampling methods and their subtypes have been examined. But to summaries the entire discussion, the key distinctions between probability sampling techniques and non-probability sampling techniques are as follows: [20]

Table 6.2: Difference Between Probability Sampling and Non-Probability Sampling Methods

	Probability Sampling Methods	Non-Probability Sampling Methods
Definitions	Probability sampling is a sampling technique in which samples from larger population are chosen using a method based on theory of probability.	Non probability sampling is a sampling technique in which researcher select samples based on the researcher's subjective judgement rather than random selection.
Alternatively known as	Random sampling method.	Non random sampling method.
	The population is selected randomly.	The population is selected arbitrarily.
Nature	The research is conclusive	The research is exploratory
Sample	Since there is a matter for deciding the sample and the	Seems the sampling method is arbitrary, the population.

	Probability Sampling Methods	**Non-Probability Sampling Methods**
	population demographic are exclusively represented.	demographics representation is almost always skewed.
Time Taken	Takes longer to conduct since the research design define the selection parameters before the market research study begins.	This type of sampling method is quick since neither the sample nor the selection criteria of the sample are undefined.
Results	This type of sampling is entirely unbiased; hence, the results are also conclusive.	This type of sampling is entirely biased and hence, the results are biased too rendering research speculative.
Hypothesis	In probability sampling there is an underlying hypothesis before study begins, and this method aims to prove the hypothesis.	In non-probability sampling the hypothesis is derived after conducting research study.

6.5 Sampling Works:

Accurately doing research on huge populations can be challenging for researchers. It may not always be practicable to examine every member of the group. They frequently select a small part to represent the entire group because of this. We refer to this as a sample. Researchers can estimate the features of the broader population using samples and the characteristics of the small group. [21]

The sample picked should fairly represent the total population. When selecting a sample from a broader population, it's crucial to take the sample selection process into account. A representative sample must be taken at random from the entire population in order to be accurate. For instance, a lottery mechanism may be used to sample 10% of the student body to ascertain the average age of students in an institution.

- Sampling enables researchers to make observations and calculations using a small sample of a larger population.

Random, block, judgement, and systematic sampling are a few examples of sample types.

- Sampling errors, which may be caused by bias or random sampling, should be recognised by researchers.

In order to understand the requirements and preferences of their target market, businesses employ sampling as a marketing strategy. During audits, certified public accountants employ sampling to assess the precision and completeness of account balances.

6.5 Sampling Methods:

It is unlikely that the researcher will be able to gather information from every example in order to address the study questions. Thus, choosing a sample is necessary. The population is the whole set of cases from which the researcher's sample is drawn. Researchers use sampling techniques to cut down on the number of instances since they lack the time and resources to analyse the complete population. The stages that a s-ample procedure is expected to go through are shown in the figure.
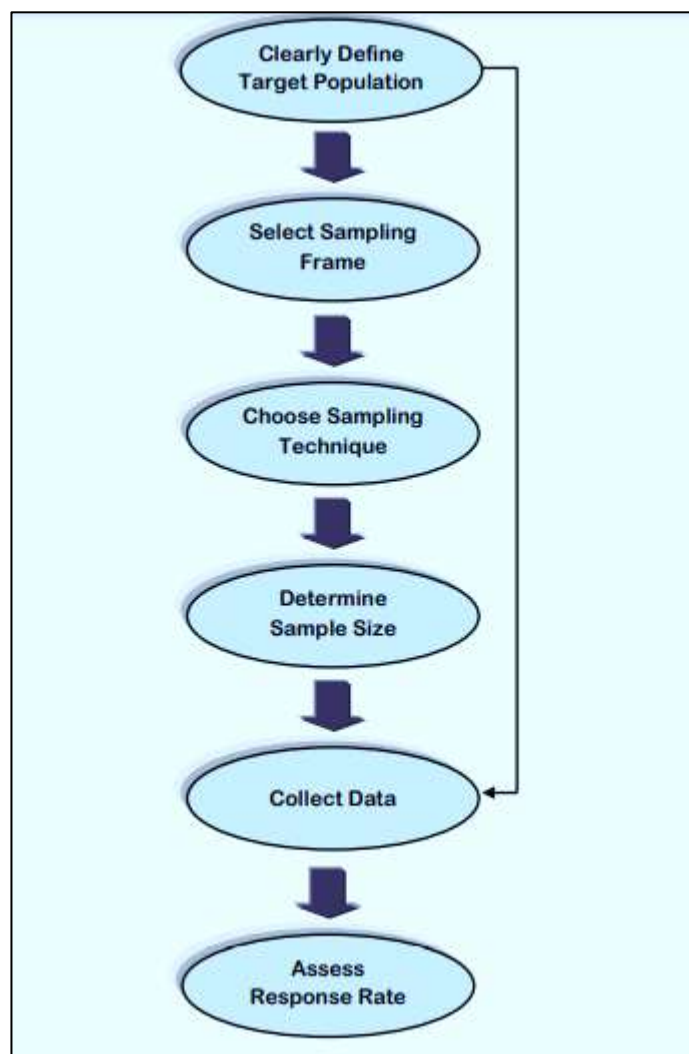
Figure 6.5: Sampling Process Steps [22]

6.6 Choosing Between Probability and Non-Probability Samples

Several criteria determine whether to use a probability-based or non-probability-based strategy to sampling:

- Goals and the size of the study
- Method of gathering data
- accuracy of the findings

A sample frame's accessibility and the resources needed to keep it up-to-date availability of additional data regarding population members. [23]

Sampling is approached differently by qualitative and quantitative researchers. Sampling is the process of choosing the group from whom you will draw data for your study. You can test your theory about the features of a particular population via sampling. The main objective of sample collection is to obtain a representative sample of a population, allowing the researcher to examine that group and draw valid generalizations about the broader group.

Probability sampling is used by quantitative researchers because it saves time and money. A well-designed and meticulously carried out sample will also produce results that are accurate.

Qualitative researchers pay more attention to how well the sample captures the essential elements of social life. To gain clarity and a deeper understanding of the sample, qualitative researchers collect data. Finding situations that will improve what scholars understand about social life's processes is their main focus. Qualitative researchers frequently gather non-probability sampling for this reason. [24]

6.7 Conclusion:

Let's discuss a tool that can help you manage these insights now that we have learnt how various sampling technique's function and are frequently utilized by researchers in market research so that they don't need to investigate the complete population to acquire meaningful insights. The various kinds of sampling methods and procedures were discussed in this work. Additionally, the six processes that must be followed to do sampling were described. The two types of sampling techniques are probability sampling and non-probability sampling, as was already explained. Each of these strategies uses a variety of sampling methodologies. Quota sampling, Snowball sampling, Judgement sampling, and Convenience sampling are examples of non-probability sampling, while simple random, stratified random, cluster sampling, systematic sampling, and multi-stage sampling are examples of probability sampling.

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