



## Description

In [research design](#), population and sampling are two important terms. A population is a group of individuals that share common connections. A sample is a subset of the population. The sample size is the number of individuals in a sample. The more representative the sample of the population, the more confident the researcher can be in the quality of the results.

## Types of Sampling Methods

Illustration of the importance of sampling:

A researcher might want to study the adverse health effects associated with working in a coal mine. However, it would be impossible to study a large population of coal workers. So, the researcher would need to narrow down the population and build a sample to collect data. This sample might be a group of coal workers in one city.

Sampling methods are as follows:

**Probability Sampling** is a method wherein each member of the population has the same probability of being a part of the sample.

**Non-probability Sampling** is a method wherein each member of the population does not have an equal chance of being selected. When the researcher desires to choose members selectively, non-probability sampling is considered. Both sampling techniques are frequently utilized. However, one works better than others depending on research needs.

## Qualitative and Quantitative Research

In [Qualitative research](#), non-numerical data is used to study elements in their natural settings. This helps to interpret and measure how these elements affect humans or other living beings.

There are three main types of qualitative sampling:

- **Purposive sampling:** Pre-selected criteria related to [research hypothesis](#) determines the participants for research, for example, a study on cancer rates for individuals who live near a

nuclear power station.

- **Quota sampling:** The researcher establishes participant quotas before forming a sample. Selection of participants that meet certain traits like gender, age, health, etc.
- **Snowball sampling:** The participants in the study refer other individuals who fit the traits required for the study, to the researcher.

[Quantitative research](#) is used to categorize, rank, and measure numerical data. Researchers establish general laws of behavior found in different contexts and settings. The goal is [to test a theory](#) and support or reject it.

The three main types of quantitative sampling are:

- **Random sampling:** Random sampling is when all individuals in a population have an equal chance of being selected.
- **Stratified sampling:** Stratified sampling is when the researcher defines the types of individuals in the population based on specific criteria for the study. For example, a study on smoking might need to break down its participants by age, race, or socioeconomic status.
- **Systematic sampling:** Systemic sampling is choosing a sample on an orderly basis. To build the sample, look at the target population and choose every fifth, tenth, or twentieth name, based upon the needs of the sample size.

## The Importance of Selecting an Appropriate Sampling Method

Sampling yields significant research result. However, with the differences that can be present between a population and a sample, sample errors can occur. Therefore, it is essential to use the most relevant and useful sampling method.

Below are three of the most common sampling errors.

- Sampling bias occurs when the sample does not reflect the characteristics of the population.
- Sample frame errors occur when the wrong sub-population is used to select a sample. This can be due to gender, race, or economic factors.
- Systematic errors occur when the results from the sample differ significantly from the results of the population.

What is your experience with research design and sampling methods? Have you faced some of the challenges mentioned in this article? Please share your thoughts in the comments.

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