# **Sampling in Social Sciences**

#### Definition

A sample is defined as a smaller set of data that is chosen and/or selected from a larger population by using a predefined selection method. These elements are known as sample points, sampling units or observations. Creating a sample is an efficient method of conducting research as in most cases, it is impossible or very expensive and time consuming to research the whole population and hence researching the sample provides insights that can be applied to the whole population.

For example, if a cell-phone manufacturer would like to conduct a research study on the features that the students in US Universities most use, what features they would like to see in the devices and the price that they are willing to pay for these features; an in-depth research study has to be conducted. This step is imperative to understand the features that have to developed, the features that have to be upgraded, pricing of the device and the go-to market strategy. In 2016/17 alone, there were 24.7 million students enrolled in universities across the US. It is impossible to conduct a research on all of these students; the time spent would create the new device redundant and the money spent in development would render the study useless. Hence, creating a sample of universities by geographical location and further creating a sample of this students from these universities, provides a large enough number of students that this research can be conducted, with.

Typically, the population for market research is very large. Making an enumeration of the whole population is practically impossible. The sample usually represents a manageable size from this population. Data is then collected from these samples in the form of surveys, polls and questionnaires and this data analysis is then extrapolated to the larger population.

## Types of Samples: Sample Selection Methodologies with Examples

The process of deriving a sample is called a sampling method. Sampling forms an integral part of the research design as this method derives the quantitative data and the qualitative data that can be collected as part of a research study. Sampling methods can be characterized into two distinct methods: probability sampling and non-probability sampling.

#### Types of Samples: Probability Sampling Methodologies with Examples

Probability sampling is a method of deriving a sample where the sample objects are selected from a population based on the theory of probability. This sample method includes everyone in the sample and everyone has an equal chance of being selected. Hence, there is no bias whatsoever in this type of sample. Each person in the population can subsequently be a part of the research. The selection criteria of this sample is decided right at the outset of the market research study and forms an important component of research.

Probability sampling can be further classified into four distinct types of samples. They are-

**Simple random sampling:** The simplest way of selecting a sample is the simple random sampling. In this method, each member has an equal chance of being a part of the sample. The objects in this sample are chosen purely on a random basis and each member has the exact same probability of being chosen. For example, if a University a dean would like to collect feedback from students about their perception of the teachers and level of education, all 1000 students in the University could be a part of this sample. Any 100 students can be selected at random to be a part of this sample.

**Cluster sampling:** Cluster sampling is a type of sampling method where the respondent population is divided into equal clusters. Clusters are identified and included in a sample on the basis of defining demographic parameters such as age, location, sex etc. which makes it extremely easy for a survey creator to derive effective inference from the feedback. For example, if the FDA would like

to collect data about adverse side-effects from drugs, they can divide mainland US into distinctive clusters, like states. Research studies are then administered to respondents in these clusters. This type of generating a sample makes the data collection in-depth and provides easy to consume and action upon, insights.

**Systematic sampling**: Systematic sampling is a sampling method where the respondents are chosen at equal intervals from a population. The method to select the sample is to pick a starting point and then pick respondents at a predefined sample interval. For example, while selecting 1,000 volunteers for the Olympics from an application list of 10,000 people, each applicant could be provided a count from 1 till 10,000. Then starting from 1 and selecting each respondent with an interval of 10, a sample of 1,000 volunteers can be got.

**Stratified random sampling**: Stratified random sampling is a method of dividing the respondent population into distinctive but predefined parameters in the research design phase. In this method, the respondents don't overlap but collectively represent the whole population. For example, a researcher looking to analyze people from different socioeconomic backgrounds can distinguish respondents into their annual salaries. This forms smaller groups of people or samples and then some objects from these samples can be used for the research study.

## Types of Samples: Non-Probability Sampling Methodologies with Examples

The non-probability sampling method uses the researcher's discretion of selecting a sample. This type of sample is derived mostly on the basis of the researcher or statistician's ability to get to this sample. This type of sampling is used for preliminary research where the primary objective is to derive a hypothesis about the topic in research. Here each member of the population does not have an equal chance of being a part of the sample and those parameters are known only post selection to the sample.

Non-probability sampling can be further classified into four distinct types of samples. They are:

**Convenience sampling**: Convenience sampling, in easy terms stands for the convenience at which a researcher can access a respondent. There is no scientific method of deriving this sample. Researchers have nearly no authority over selecting elements of the sample and it's purely done on the basis of proximity and not representativeness. This non-probability sampling method is used when there are time and cost limitations in collecting feedback. For example, researchers that are conducting a mall-intercept survey to understand the probability of using a fragrance from a perfume manufacturer. In this sampling method, the sample respondents are chosen purely on their proximity to the survey desk and their willingness to participate in the research.

Judgmental/purposive sampling: The judgemental or purposive sampling method is a method of developing a sample purely on the basis and discretion of the researcher purely on the basis of nature of study along with his/her understanding of the target audience. In this sampling method, people who only fit the research criteria and end objective are selected and the remaining are kept out. For example, if the research topic is understanding what University is preferred by a student for their Masters, if the question asked is "Would you like to do your Masters?", anything other than a response, "Yes" to this question, everyone else is excluded from this study.

**Snowball sampling:** Snowball sampling or chain-referral sampling is defined as a non-probability sampling technique in which the samples have traits that are rare to find. This is a sampling technique, in which existing subjects provide referrals to recruit samples required for a research study. For example, while collecting feedback about a sensitive topic like AIDS, respondents aren't forthcoming with information. In this case, the researcher can recruit people that have an understanding or knowledge of such people and collect information from them or task them to collect information.

**Quota sampling:** Quota sampling in a method of collecting a sample where the researcher has the liberty to select a sample on the basis of their strata. The major characteristic of this method is that two people cannot exist under two different conditions. For example, when a shoe manufacturer would like to understand from millennial their perception of the brand with other parameters

like comfort, pricing etc. Then only females who are millennial are selected for this study as the research objective is to collect feedback about women's shoes.

#### **Determining Sample Size: How to Calculate Sample Size**

As we have learnt above, the right sample size is important for the success of data collection in a market research study. But is there a right number for a sample size? What parameters decide the sample size? What are the distribution methods of the survey? To understand all of this and make an informed calculation of the right sample size, it is first important to understand four important variables that form the basis characteristics of a sample. They are:

**Population size**: The population size is all the people that can be considered for the research study. This number in most cases runs into huge numbers. For example, the population of the United States is 327 million. But in market research, it is impossible to consider all of them for the research study.

**Margin of error (confidence interval):** The margin of error is depicted by a percentage that is a statistical inference about the confidence of what number of the population depicts the actual views of the whole population. This percentage helps towards the statistical analysis in selecting a sample and how much error in this would be acceptable.

**Confidence level**: This metric measures where the actual mean falls within a confidence interval. The most common confidence intervals are 90%, 95% and 99%.

**Standard deviation**: This metric covers the variance in a survey. A safe number to consider is .5 which would mean that the sample size has to be that large.

#### Advantages of a Sample

As soon above, there are many advantages of a sample. Some of the biggest advantages, are:

**Reduced cost & time**: Since using a sample reduces the number of people that have to be reached out to, it reduces cost and time. Imagine the time saved

between conducting a research with a population of millions vs conducting a research study with the use of a sample.

**Reduced resource deployment**: It is obvious that if the number of people that are part of a research study is much lower due to the sample, the resources required are also much lesser. The manpower required in researching the sample is much lesser than the manpower required in researching the whole population.

Accuracy of data: Since the sample is indicative of the population, the data collected is accurate. Also, since there is a willingness of the respondent to participate, the survey dropout rate is much lower which increases the validity and accuracy of the data.

**Intensive & exhaustive data**: Since there are lesser respondents, the data collected from a sample is intensive and exhaustive. More time and effort is given to each respondent rather than having to collect data from a lot of people.

Apply properties to a larger population: Since the sample is indicative of the larger population, it is safe to say that the data collected and analyzed from the sample, the properties can be applied to the larger population and it would hold true.

To collect accurate data for research, filter bad panelists and eliminate bias by applying different control measures. If you need any help with arranging sample audience for your next market research project, get in touch with us. We have more than 22 million panelists across the world!

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