Multistage, Purposive, Snowball Sampling

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Multistage Sampling

Multistage sampling is a sampling method that divides the population into groups (or clusters) for conducting research. It is a complex form of cluster sampling, sometimes, also known as multistage cluster sampling. During this sampling method, significant clusters of the selected people are split into sub-groups at various stages to make it simpler for primary data collection.

Figure 1 showing Multistage sampling.

What are the Steps to Conduct Multistage Sampling?

There are four multistage steps to conduct multistage sampling:

Step one: Choose a sampling frame, considering the population of interest. The researcher allocates a number to every group and selects a small sample of relevant separate groups.

Step two: Select a sampling frame of relevant separate sub-groups. Do this from related, different discrete groups selected in the previous stage.

Step three: Repeat the second step if necessary.

Step four: Using some variation of probability sampling, choose the members of the sample group from the sub-groups.

What are the Types of Multistage Sampling?

There are two types of multistage sampling – multistage cluster sampling and multistage random sampling. In market research, multistage sampling is the choosing of samples at stages and choosing smaller sampling units at every step.

Multistage Cluster Sampling.

Multistage cluster sampling is a complex type of cluster sampling. The researcher divides the population into groups at various stages for better data collection, management, and interpretation. These groups are called clusters.

For example, a researcher wants to know the different eating habits in western Europe. It is practically impossible to collect data from every household. The researcher will first choose the countries of interest. From these countries, he/she chooses the regions or states to survey. And from these regions, he/she further narrows down his research by choosing specific cities and towns that represent the region. The researcher does not interview all the residents of the city or town. He/she further chooses particular respondents from the selected cities to participate in research. Here we see that clusters are selected at various stages until the researcher narrows down to the sample required.

Multistage Random Sampling.

The concept of multistage random sampling technique is similar to multistage cluster sampling. But in this case, the researcher chooses the samples randomly at each stage. Here, the researcher does not create clusters, but he/she narrows down the convenience sample by applying random sampling.

For example, a researcher wants to understand pet feeding habits among people living in the USA. For this, he/she requires a sample size of 200 respondents. The researcher selects 10 states out of 50 at random. Further, he/she randomly picks out 5 districts per state. From these 50 randomly selected states, he/she then chooses 4 pet-owning households to conduct his research.

***Advantages*.**

You don't need to start with a sampling frame of your target population.

Compared to a simple random sample, it's relatively inexpensive and effective when you have a large or geographically dispersed population.

It's flexible—you can vary sampling methods between stages based on what's appropriate or feasible.

***Disadvantages*.**

Compared to simple random samples, you'll need a larger sample size for a multistage sample to achieve the same statistical inference properties.

The best choice of sampling method at each stage is very subjective, so you'll need clear reasoning for your decision to avoid biased decision-making.

It can lead to unrepresentative samples because large sections of populations may not be selected for sampling, leading to under coverage bias and selection bias.

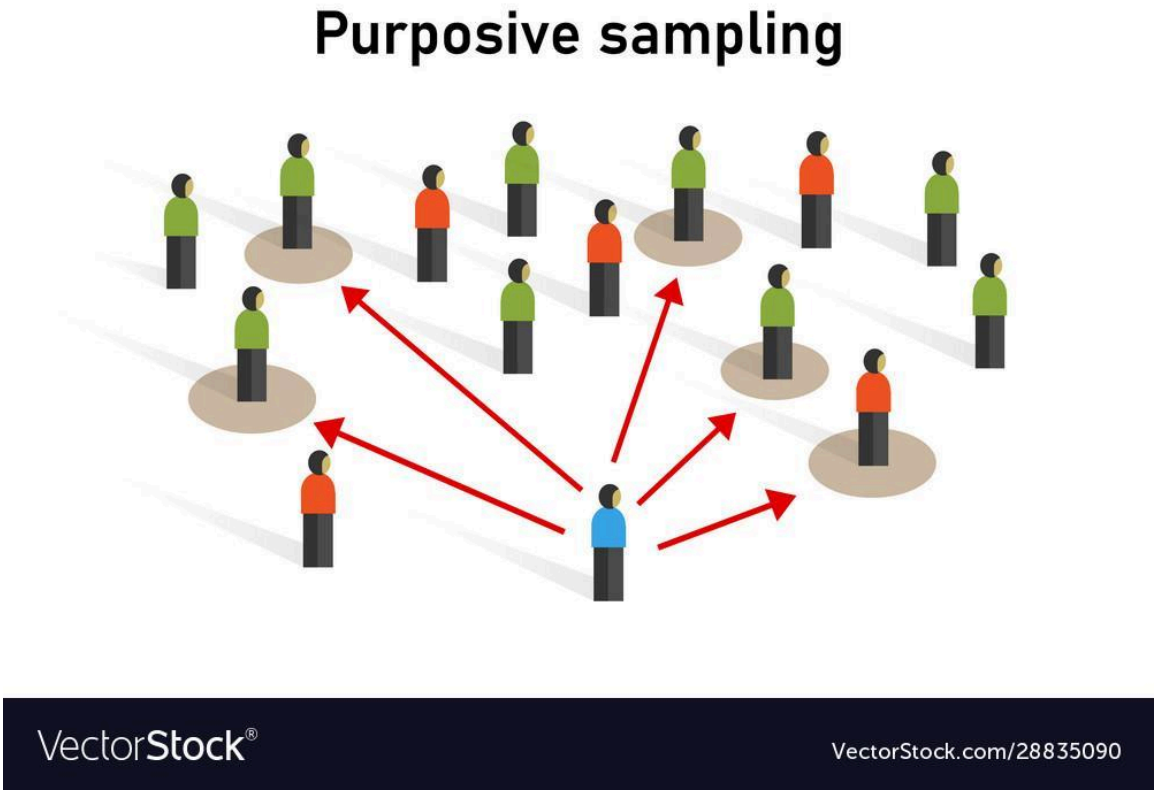
Purposive Sampling

Purposive sampling is a technique in which the person conducting the research relies on their judgment to choose the members who will be part of the study. It is a type of nonprobability sample, and it's also referred to as a judgmental or expert sample.

A purposive sample is a non-randomly selected and typically smaller subset of the population intended to represent it logically. This can be done by understanding the population's background by selecting a sample that portrays those variations.

Researchers use sampling methods when they want to access a particular subset of people, where all the survey participants are selected to fit a specific profile.

Figure 2 showing Purposive sampling.



Types of Purposive Sampling

Maximum Variation Sampling.

This is also known as heterogeneous sampling. It is a purposive sampling technique that captures various customer perspectives of your study of interest.

Homogeneous Sampling.

Homogeneous sampling is a purposive sampling method that is the opposite of the maximum variation method. With homogeneous sampling, a group of people of the same age, gender, background, or occupation will be chosen. It is often used when researching a specific trait, feature, or area of interest.

Typical Case Sampling.

Typical case sampling is used when the researcher or evaluator wants to study a phenomenon related to the parent sample's ordinary members. For example, suppose a survey taker wants to understand how inflation affects people with average or low income. In that case, only average or low-income earners will be selected from the overall sample.

Extreme Case Sampling.

Extreme case purposive sampling is used to study the outliers from a set norm for a particular phenomenon or trend.

Critical Case Sampling.

Critical case purposive sampling selects one information-rich case to represent the population. A researcher expects the information-rich case to provide details that apply to other similar cases by studying it.

Total Population Sampling.

Total population purposive sampling is a way of carrying out sampling where the entire population carrying one or more shared characteristics is examined or surveyed.

These attributes can be specific experience, knowledge, or skills.

Expert Sampling.

Expert purposive sampling is used when the researcher needs to obtain knowledge from individuals with particular expertise. This skill may be necessary during the starting phase of qualitative research design because it can help understand new areas of interest.

Advantages. One of the major advantages of purposive sampling is the different types of sampling techniques, from homogeneous sampling to critical case sampling, that can be used to achieve qualitative research design.

With the help of purposive sampling, it's easier to generalize your sample than a random sample where not all participants have the characteristic you are studying.

The margin of error with the purposive sampling is low.

It is cost-effective and can produce substantial results in real-time.

Helps to avoid sampling errors.

Disadvantages. A vast array of inferential statistical procedures are present in this structure, thus making these statistics invalid.

As the participants are aware that they are a part of the research project, bias is possible.

Snowball Sampling

Snowball sampling is a non-probability sampling method where new units are recruited by other units to form part of the sample. Snowball sampling can be a useful way to conduct research about people with specific traits who might otherwise be difficult to identify (e.g., people with a rare disease).

Also known as chain sampling or network sampling, snowball sampling begins with one or more study participants. It then continues on the basis of referrals from those participants. This process continues until you reach the desired sample, or a saturation point.

Example showing Snowball sampling isn't figure 3

When to Use Snowball Sampling

Snowball sampling is a widely employed method in qualitative research, specifically when studying hard-to-reach populations.

These may include:

Populations that are small relative to the general population

Geographically dispersed populations

Populations possessing a social stigma or particular shared characteristic of interest

In all these cases, accessing members of the population can be difficult for non-members, as there is no sampling frame available.

Research in the fields of public health (e.g., drug users), public policy (e.g., undocumented immigrants), or niche genres (e.g., buskers) often uses snowball sampling.

This sampling method is also used to study sensitive topics, or topics that people may prefer not to discuss publicly. This is usually due to a perceived risk associated with self-disclosure. Snowball sampling allows you to access these populations while considering ethical issues, such as protecting their privacy and ensuring confidentiality.

Types of Snowball Sampling

Linear Snowball Sampling

formation of a sample group starts with one individual subject providing information about just one other subject and then the chain continues with only one referral from one subject. This pattern is continued until enough number of subjects are available for the sample.

Exponential Non-Discriminative Snowball Sampling

In this type, the first subject is recruited and then he/she provides multiple referrals. Each new referral then provides with more data for referral and so on, until there is enough number of subjects for the sample.

Exponential Discriminative Snowball Sampling:

In this technique, each subject gives multiple referrals, however, only one subject is recruited from each referral. The choice of a new subject depends on the nature of the research study.

Advantages. Depending on your research goals, there are advantages to using snowball sampling.

Snowball sampling helps you research populations that you would not be able to access otherwise. Members of stigmatized groups (e.g., people experiencing homelessness) may hesitate to participate in a research study due to fear of exposure. Snowball sampling helps in this situation, as participants refer others whom they know and trust to the researcher.

Since snowball sampling involves individuals recruiting other individuals, it is low-cost and easy to recruit a sample in this way.

Unlike probability sampling, where you draw your sample following specific rules and some form of random selection, snowball sampling is flexible. All you need is to identify someone who is willing to participate and introduce you to others.

Disadvantages. Snowball sampling has disadvantages, too, and is not a good fit for every research design. As the sample is not chosen through random selection, it is not representative of the population being studied. This means that you cannot make statistical inferences about the entire population and there is a high chance of research bias.

The researcher has little or no control over the sampling process and relies mainly on referrals from already-identified participants. Since people refer others whom they know (and share traits with), this sampling method has a high potential for sampling bias.

Relying on referrals may lead to difficulty reaching your sample. People may not want to cooperate with you, hesitate to reveal their identities, or mistrust researchers in general.

Table 1 : Difference between Multistage sampling and Snowball sampling.

DIFFERENCES	**MULTISTAGE SAMPLING**	**SNOWBALL SAMPLING**
Sampling technique	Probability sampling	Non-probability

Meaning / Main steps	Divide sampling process into stages	Collect data from references you get from other sample
Mainly used / Purpose	Multiple sampling is required with multiple stages	Collecting data from population who are difficult to reach.
Major limitation	Time-consuming	Reluctance in referring