

TOPIC – TYPES PROBABILITY SAMPLING & NON-PROBABILITY SAMPLING. / PRPCEDURES/ APPROACHES/ METHODS/ TECHNIQUES OF SAMPLING

There are two basic approaches to sampling: Probability Sampling and Non-probability Sampling.

1.PROBABILITY SAMPLING - Probability sampling is also known as random sampling or chance sampling. In this, sample is taken in such a manner that each and every unit of the population has an equal and positive chance of being selected. In this way, it is ensured that the sample would truly represent the overall population. Probability sampling can be achieved by random selection of the sample among all the units of the population. Major random sampling procedures are –

- Simple Random Sample**
- Systematic Random Sample**
- Stratified Random Sample**
- Cluster/ Multistage Sample.**

1a.Simple Random Sample: For this, each member of the population is numbered. Then, a given size of the sample is drawn with the help of a random number chart. The other way is to do a lottery. Write all the numbers on small, uniform pieces of paper, fold the papers, put them in a container and take out the required lot in a random manner from the container as is done in the kitty parties. It is relatively simple to implement but the final sample may miss out small sub groups.

Advantages: The sample will be free from Bias (i.e. it's random!)

Disadvantages: Difficult to obtain. Due to its very randomness, “freak” results can sometimes be obtained that are not representative of the population. In addition, these freak results may be difficult to spot. Increasing the sample size is the best way to eradicate this problem.

1.b Systematic Random Sample: It also requires numbering the entire population. Then every nth number (say every 5th or 10th number, as the case may be) is selected to constitute the sample. It is easier and more likely to represent different subgroups.

Advantages: Can eliminate other sources of bias.

Disadvantages: Can introduce bias where the pattern used for the samples coincides with a pattern in the population.

1.c Stratified Random Sample: At first, the population is first divided into groups or strata each of which is homogeneous with respect to the given characteristic feature. From each strata, then, samples are drawn at random. This is called stratified random sampling. For example, with respect to the level of socio-economic status, the population may first be grouped in such strata as high, middle, low and very low socio-economic levels as per pre-determined criteria, and random sample drawn from each group. The sample size for each sub-group can be fixed to get representative sample. This way, it is possible that different categories in the population are fairly represented in the sample, which could have been left out otherwise in simple random sample

Advantages: Yields more accurate results than simple random sampling. Can show different tendencies within each category (e.g. men and women)

Disadvantages: Nothing major, hence it's used a lot.

1.d Cluster/ Multistage Sample: In some cases, the selection of units may pass through various stages, before you finally reach your sample of study. For this, a State, for example, may be divided into districts, districts into blocks, blocks into villages, and villages into identifiable groups of people, and then taking the random or quota sample from each group. For example, taking a random selection of 3 out of 15 districts of a State, 6 blocks from each selected district, 10 villages from each selected block and 20 households from each selected village, totaling 3600 respondents. This design is used for large-scale surveys spread over large areas.

The advantage is that it needs detailed sampling frame for selected clusters only rather than for the entire target area. There are savings in travel costs and time as well. However, there is a risk of missing on important sub-groups and not having complete representation of the target population

Advantages: Less expensive and time consuming than a fully random sample. Can show 'regional' variations.

Disadvantages: Not a genuine random sample. Likely to yield a biased result (especially if only a few clusters are sampled).

2.NON-PROBABILITY SAMPLING It involves the selection of elements based on assumptions regarding the population of interest, which forms the criteria for selection. Hence, because the selection of elements is non-random, non-probability sampling does not allow the estimation of sampling errors.

Non-probability sampling is a non-random and subjective method of sampling where the selection of the population elements comprising the sample depends on the personal judgment or the discretion of the sampler.

Non-probability sampling includes –

- Accidental/ Convenience/ Opportunity/ Availability/ Haphazard/ Grab Sampling**
- Quota Sampling**
- Judgment/ Subjective/ Purposive Sampling**
- Snowball Sampling.**

2.a Convenience/ Accidental Sampling: Accidental sampling (sometimes known as grab, convenience or opportunity sampling) is a type of non-probability sampling which involves the sample being drawn from that part of the population which is close to hand. That is, a sample population selected because it is readily available and convenient. . This type of sampling is most useful for pilot testing.

2.b Quota Sampling: In quota sampling, the population is first segmented into mutually exclusive sub-groups, just as in stratified sampling. Then judgment is used to select the subjects or units from each segment based on a specified proportion. For example, an interviewer may be told to sample 200 females and 300 males between the age of 45 and 60. In quota sampling the selection of the sample is non-random. For example interviewers might be tempted to interview those who look most helpful. The problem is that these samples may be biased because not everyone gets a chance of selection. This random element is its greatest weakness and quota versus probability has been a matter of controversy for many years.

2.c Subjective or Purposive or Judgment Sampling: In this sampling, the sample is selected with definite purpose in view and the choice of the sampling units depends entirely on the discretion and judgment of the investigator. This sampling suffers from drawbacks of favoritism and nepotism depending upon the beliefs and prejudices of the investigator and thus does not give a representative sample of the population.

This sampling method is seldom used and cannot be recommended for general use since it is often biased due to element of subjectivity on the part of the investigator. However, if the investigator is experienced and skilled and this sampling is carefully applied, then judgment samples may yield valuable results.

2.d. Snowball Sampling: Snowball sampling is a method in which a researcher identifies one member of some population of interest, speaks to him/her, and then asks that person to identify others in the population that the researcher might speak to. This person is then asked to refer the researcher to yet another person, and so on.

This sampling technique is used against low incidence or rare populations. Sampling is a big problem in this case, as the defined population from which the sample can be drawn is not available. Therefore, the process sampling depends on the chain system of referrals. Although small sample sizes and low costs are the clear advantages of snowball sampling, bias is one of its disadvantages. The referral names obtained from those sampled in the initial stages may be similar to those initially sampled. Therefore, the sample may not represent a cross-section of the total population. It may also happen that visitors to the site or interviewers may refuse to disclose the names of those whom they know.

Example-govt asked infected covid -19 People for how people came into contact with you in order to reveal the sample of infected people to make them quarantine from Population to break the chain of Pandemic spread.