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Professor S.A.H. Moiruddin  
Department of Sociology  
Vidyasagar University  
M.A. 4th Semester  
course NO - Soc/403

Topic : Determining the Sample Design.

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. Sample design may as well lay down the number of items to be included in the sample i.e., the size of the sample.

When we collect any sort of data, especially quantitative data, whether observational, through surveys or from secondary data, we need to decide which data to collect and from whom.

This is called the sample.

There are a variety of ways to select our sample, and to make sure that it gives us results that will be reliable and credible.

The difference between population and sample

Ideally, researcher would collect information from every single member of the population that we are studying. However, most of the time that would take too long time and so we have to select a suitable sample: a subset of the population.

Why we are choosing a sample

The main idea behind choosing a sample is to be

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able to generalise our findings to the whole population, ~~and not exclude any particular groups~~  
 Which means that our sample must be:

- ⊗ Representative of the population. In other words, it should contain similar proportions of subgroups as the whole population and not exclude any particular groups, either by methods of sampling or by design, or by who chooses to respond.
- ⊗ Large enough to give you enough information to avoid errors.

It does ~~not~~ need to be ~~spatially specific~~ at least a certain size so that you know that your answers are likely to be broadly correct.

If the sample is not representative, we can introduce bias into the study. If it is not large enough, the study will be imprecise

However, if we get the relationship between sample and population, then we can draw strong conclusions about the nature of the population.

Now the question is How large should our sample be? It depends how precise we want the answer. Larger samples generally give more precise answer.

### Types of Sampling

There are two types of sampling: a) Probability Sampling and b) Non-probability Sampling.

Probability sampling is where the probability of each person or thing being a part of the sample is known. Non-probability sampling is where it is not.



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### ③ Major Types of Probability Sampling

Probability sampling methods allow the researcher to be precise about the relationship between the sample and the population.

In Simple Random Sampling, every member of the population has an equal chance of being chosen. The drawback is that the sample may not be genuinely representative. Small but important subsections of the population may not be included.

Researchers therefore developed an alternative method called Stratified Random Sampling. This method divides the population into smaller homogeneous groups, called strata, and then takes a random sample from each stratum.

Proportional Stratified Random Sampling takes the same proportion from each stratum, but again suffers from the disadvantage that rare groups will be badly represented. Non-proportional stratified sampling therefore takes a larger sample from the smaller strata, to ensure that there is a large enough sample from each stratum.

Systematic Random Sampling relies on having a list of the population, which should ideally be randomly ordered. The researcher then takes every  $n$ th name from the list.

Cluster Sampling is designed to address problems of a widespread geographical population. Random sampling from a large population is likely to lead to high cost of access. This can be overcome by dividing the population into clusters, selecting only two or three clusters and sampling from within them. For example, if we wished to find out about the use of transport in urban areas in India, we could randomly select just two or three cities, and then sample fully from within them.



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## Non-probability Sampling <sup>④</sup>:

Using non-probability sampling methods, it is not possible to say what is the probability of any particular member of the population being sampled. Although this does not make the sample 'bad', researchers using such samples cannot be as confident in drawing conclusions about the whole population.

Major types of non-probability sampling are as follows:

convenience sampling selects a sample on the basis of how easy it is to access. Such samples are extremely easy to organise, but there is no way to guarantee whether they are representative.

Quota sampling divides the population into categories, and then selects from within categories until a sample of the chosen size is obtained within that category. Some market research is this type, which is why researchers often ask for age: they are checking whether we will help them meet their quotas for particular age groups.

Purposive sampling is where the researcher only approaches people who meet certain criteria, and then checks whether they meet other criteria. Again, market researchers out and about with clipboards often use this approach: for example, if they are talking to examine the shopping habits of men aged between 20 and 40, they would only approach men, and then ask their age.

Snowball sampling is where the researcher starts with one person who meets his/her criteria, and then uses that person to identify others. This works well when our sample has very specific criteria: for example, if you want to talk to workers with a particular set of responsibilities, a researcher might approach one person with that set, and ask them to introduce with others.