1. Statistics is unable to explain individual items
2. Statistics are unable to study qualitative characters
3. Statistical results are not accurately correct
4. Statistics deal with average
5. Statistics is only one of the methods of studying a given problem
6. Statistics is liable to be misused
7. Qualitative Aspect Ignored
8. To Many methods to study problems
9. Results are true only on average
10. Statistical laws are not exact

Functions or Uses of Statistics

(1) Statistics helps in providing a better understanding and exact description of a phenomenon of nature.

(2) Statistics helps in the proper and efficient planning of a statistical inquiry in any field of study.

(3) Statistics helps in collecting appropriate quantitative data.

(4) Statistics helps in presenting complex data in a suitable tabular, diagrammatic and graphic form for easy and clear comprehension of the data.

(5) Statistics helps in understanding the nature and pattern of variability of a phenomenon through quantitative obersevations.

(6) Statistics helps in drawing valid inferences, along with a measure of their reliability about the population parameters from the sample data.

- **Systematic random sampling**. With systematic random sampling, we create a list of every member of the population. From the list, we randomly select the first sample element from the first *k* elements on the population list. Thereafter, we select every *kth* element on the list.

  This method is different from simple random sampling since every possible sample of *n* elements is not equally likely.

tratified sampling. With stratified sampling, the opulation is divided into groups, based on some haracteristic. Then, within each group, a probability ample (often a simple random sample) is selected. n stratified sampling, the groups are called **strata**.

As a example, suppose we conduct a national survey. We might divide the population into groups or strata, based on geography - north, east, south, and west. Then, within each stratum, we might randomly select survey respondents.

Cluster sampling. With cluster sampling, every member of the population is assigned to one, and only one, group. Each group is called a cluster. A sample of clusters is chosen, using a probability method (often simple random sampling). Only individuals within sampled clusters are surveyed.

Note the difference between cluster sampling and stratified sampling. With stratified sampling, the sample includes elements from each stratum. With cluster sampling, in contrast, the sample includes elements only from sampled clusters.

- **Multistage sampling**. With multistage sampling, we select a sample by using combinations of different sampling methods.

  For example, in Stage 1, we might use cluster sampling to choose clusters from a population. Then, in Stage 2, we might use simple random sampling to select a subset of elements from each chosen cluster for the final sample.

Probability Sampling Methods

The main types of probability sampling methods are simple random sampling, stratified sampling, cluster sampling, multistage sampling, and systematic random sampling. The key benefit of probability sampling methods is that they guarantee that the sample chose is representative of the population. This ensures that the statistical conclusions will be valid.

- **Simple random sampling**. Simple random sampling refers to any sampling method that has the following properties.
  - The population consists of N objects.
  - The sample consists of n objects.
  - If all possible samples of n objects are equally likely to occur, the sampling method is called simple random sampling.

There are many ways to obtain a simple random sample. One way would be the lottery method. Each of the N population members is assigned a unique number. The numbers are placed in a bowl and thoroughly mixed. Then, a blind-folded researcher selects n numbers. Population members having the selected numbers are included in the sample.