

What is “Statistics”?

It is difficult to define statistics in a few words; since its dimension, scope, function, use and importance are constantly changing over time. No formal definition thus has emerged so far and no definition is perhaps beyond controversy.

According to Fisher (1947)¹, the science of statistics is essentially a branch of applied mathematics and may be regarded as mathematics, applied to observational data.

Croston and Cowden (1948) defined statistics as the subject of collection, presentation and analysis of numerical data.

As Yule and Kendal (1950) opined, Statistics means quantitative data, which are affected to a marked extent by multiplicity of causes.

American Heritage Dictionary defines statistics as: “The mathematics of the collection, organization and interpretation of numerical data especially the analysis of population characteristics by inference from sampling.”

Types of Statistical Applications:

The field of statistics consists of two branches –

Descriptive statistics focuses on collection, summarization, presentation and analysis of the data using suitable numerical and graphical methods to look for patterns in a data set.

Inferential statistics utilizes sample data to make estimates, decisions, predictions, or other generalizations about a larger set of data (population).

Uses and importance of Statistics and Statisticians:

The scope and uses of statistics are so wide and universal that they can't be enumerated instantly in a few words. Statistics has now been recognized as a separate discipline of human knowledge in its own right.

Statistics has its extensive application in the following fields:

1. Surveys:

- Determine which political candidate is more popular.
- Discover what foods teenagers prefer for breakfast
- Estimate the number of children living in a given school district

2. Government Operation:

Government often conducts experiments to aid in the development of public policy and social programs. Such experiments include:

- Consumer price
- Fluctuations in the economy
- Employment patterns
- Population trends
- Opinion polls.

¹ R. A. Fisher (1890- 1962) is known as the father of STATISTICS.

3. Scientific research:

Statistical sciences are used to enhance the validity of inference in all the fields of science, medical science etc. Such as:

- Radio carbon dating to estimate the risk of earthquakes.
- Clinical trials to investigate the effectiveness of new treatments.
- Field experiments to evaluate the irrigation methods.
- Measurements of water quality

4. Business and Industry:

Statisticians using statistical tools quantify the unknowns in order to optimize resources. They:

- Predict the demand for product and services.
- Check the quality of items manufactured in a facility
- Manage investment portfolios. And so on.

Statistics in the Business World:

In the business world, statistics has four important applications:

- To summarize business data
- To draw conclusions from that data
- To make reliable forecasts about business activities
- To improve business process.

Some Basic Vocabulary of Statistics:

Population:

A set of all values or elements defined on some common characteristics is called a population.

Thus population means an aggregate of elements possessing certain characteristics of interest in any particular investigation or enquiry. A population consists of all the items or individual about which researcher want to draw a conclusion.

'N' denotes the size of population.

Example: If we want to study the average weight of the student of 1st semester BBA then the set that consists of all the weights of the student of 1st semester BBA will be the population in this case.

Parameter

A parameter is a numerical measure that describes a characteristic of a population.

Sample:

A small and representative (desirably) part of population is known as sample.

In many particular situations it is impossible or even impractical to study the whole population, in such case only a small and representative part of population is taken under consideration to draw inferences about the population by analyzing that part of population. Such a part of population is known as sample.

Sample size is denoted by 'n'.

Statistic:

A statistic is a numerical measure that describes a characteristic of sample.