

### **Definition of Statistics:**

The term statistics appears to have been derived from the Latin word 'Status' that means a group of numbers or figures; those represent some information of our human interest.

Now-a-days this word has acquired a wider meaning and embraces all branches of human activity concerned with numerical data.

Many definitions have been given of the word statistic and each author who has written on the subjects has assigned new limits to the field which should be included in its scope

The term Statistics has been defined in two senses i.e. in Singular and in Plural sense.

In plural sense, it means a systematic collection of numerical facts and in singular sense; it is the science of collecting, classifying and using statistics. A few search definition of statistic are given below

**(i) In the Plural Sence :**

“Statistics are numerical statements of facts in any department of enquiry placed in relation to each other.” —A.L. Bowley

“The classified facts respecting the condition of the people in a state—especially those facts which can be stated in numbers or in tables of numbers or in any tabular or classified arrangement.” —Webster

The definition given by Prof. H. Sacrist appears to be the most comprehensive and meaningful:

“By statistics we mean aggregates of facts affected to a marked extent by multiplicity of causes, numerically expressed, enumerated or estimated according to reasonable standard of accuracy, collected in a systematic manner for a predetermined purpose, and placed in relation to each other.”—H. Sacrist

**(ii) In the Singular Sense:**

“Statistics may be called the science of counting or science of averages.” —Bowley

“Statistics may be defined as the collection, presentation, analysis, and interpretation of numerical data.” —Croxtton and Cowden

“The Science of Statistics is the method of judging collective, natural social phenomenon from the analysis or enumeration or collection of estimates” —King

## Scope and Importance of Statistics

Statistics is of immense use in the following cases

- [1] **Statistics and Planning:** statistics is indispensable in planning, in planning in the modern age which is termed as “the age of planning”. Planning depends on forecasting the future state provides the necessary tools of estimation and forecasting
- [2] **Statistics and Business:** Statistical knowledge is very helpful to the business it helps him in forecasting the future trends and tendencies to estimate the market fluctuations, changes in the demand conditions etc he formulates different plans and policies using statistics hence for becoming a successful businessman ideas in statistics are essential.
- [3] **Statistics and Economics:** Statistics data and techniques of statistical analysis have to be immensely useful involving economical problems such as wages, demand analysis, prices time series analysis. Maximum utilization of available resources can be made by using an econometric model based on statistical analysis.
- [4] **Statistics and Industry:** In industry, statistics is widely used in quality control in production engineering to find out whether the product is conforming to the specifications or not statistical tools, such as inspection plan, control chart etc
- [5] **Statistics and Mathematics:** Statistics are intimately related to recent advancements in statistical techniques are outcome of wide application of mathematics.
- [6] **Statistics and Medical Science:** In medical Science, the statistical tools for collection, presentation and analysis of observed facts relating to causes and

incidence of disease and the result of application various drugs and medicine are of great importance

- [7] **Statistics and war:** In war, the theory of decision function can be a great assistance to the military and personal to plan “Maximum destruction with minimum effort”
- [8] **Statistics and Research:** One cannot think of understanding any research activities without using statistics. Statistical techniques are used for collecting information in any research. Thus there is hardly any branch of study where statistics is not being used. It is used in all spheres of human activities.

### **Limitations of Statistics:**

The important limitations of statistics are

- [1] **Statistics laws are true on averages:** Statistical laws are not exact laws like mathematical or chemical. A majority of cases are not true for every individual
- [2] **Statistics are aggregates of facts, so a single observation is not a statistic.** Statistics is the study of mass of and deal with collective information. A single data or individual data is not considered as a statistic analysis
- [3] **Statistics is not suited to the study of qualitative phenomenon.** If the study of qualitative data which cannot be meaningfully converted to quantitative data then valid conclusion cannot be drawn using statistical analysis
- [4] **Statistics is only one of the methods of studying a phenomenon:** statistical method don't always provide the best possible solution to a given problem in varying culture and religions situation'

- [5] **Statistics laws are not exact.** Statistics is a science of estimates and probabilities it cannot be said with full confidence that data are completely accurate
- [6] **Statistics can be misused.** Only one who has an expert knowledge of statistical methods can handle the statistical data properly the data placed in the hands of an inexpert may lead to fallacious result.

As King point out, “Science of Statistics is the most useful servant but only of great value to those who understand its proper use”.