

Illustration of tabulation of data.

statewise % of poplⁿ.

Religion	Peeps	colists	V.P
H	9.		
M.			
Total			

Types of tabulation.

- ① Simple or one-way tabulation
when data in the table are tabulated to only one characteristic. e.g Religion of people.
- ② Two-way tabulation
when two different characters are tabulated. e.g Religion & sex.
- ③ Complex tabulation:
e.g Religion, sex & literacy rate.

Objectives of tabulation!

- ① For simplification of complex data
- ② To highlight important information
- ③ To enable easy comparison
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- ⑤ Saves space.

How is data tabulation executed.

It's done either manually or with the help of computer. Use numeric for computer analysis & tally for manual handling.

Rules of tabulation:

Difference between Primary data & Secondary data

Primary data is ^{data} collected for the first time for research. It is also described as first hand information.

Secondary data is the data that has already been gathered or collected by others.

Primary data:

- ① collected for the first time
- ② Data is original because these are ~~it~~ collected by the investigator for the first time.
- ③ These are more reliable and suitable for enquiry because they are collected for a particular purpose
- ④ Data collection is expensive both in terms of time & money.
- ⑤ No correction or editing of data is required.

Secondary data

- ① data already collected by others.
- ② Less reliable
- ③ Less money & time required. It's economical.
- ④ Both precaution & editing are essential as secondary data were collected by someone else for his own purpose.

⑥

analysis & full for manual handling

(10)

Rules of tabulation:

- ① Tables should be simple, attractive and self explanatory.
- ② No. of rows & columns should be kept minimal.
- ③ Before tabulation, data should be approximated, wherever possible necessary.
- ④ Subs & Captions should be self explanatory.
- ⑤ wherever caption is ^{not} possible, miscellaneous should be used.
- ⑥ Quality & quantity of data should not be compromised during tabulation.

(11)

Introduction to Statistics

This word is derived from the Greek word 'statistique', Latin word 'status', the Italian word 'statista' and the German word 'statistic'. ①

Statistics is defined as the study of collection, analysis, interpretation and organisation of data for different ultimate objectives.

Statistics plays a major role in economics. It helps to study the market structure and understand the different economic problems. Statistics also helps in solving the issues by formulating appropriate economic policies. With the help of statistics, economists can present the facts of economics precisely. They can also determine the cause of effect relationship between different data sets.

Functions of statistics:

- ① Simplification of complex facts: Different statistical methods help to present complex data in a simple comprehensive manner.
- ② Presentation of facts in the definite form: By ~~presenting~~ ^{using} figures in the true form, statistics helps to present the data in true form when quantitatively presented, interpretation of data becomes more effective. ①

- ③ Statistics help a business in planning process to ensure a proper balance between demand & supply offered by the firm. ④
- ④ Different statistical techniques help in the analysis of purchasing power, consumer wants etc. to understand the potential of the target market for their service or product.

In Govt:

- ① Govt. can efficiently run the economy & fulfill welfare & other objectives if proper data are provided.

Various economic policies can be formulated by using statistical tools like index number, demand forecasting, time series analysis etc.

Statistics help the gov. know its popularity

Limitations of Statistics:

Statistics does not understand qualitative aspects of life.

It deals only with aggregates.

Deals only with homogeneous data.

If not used by experts it can be biased.

Results are true only on average. ④

Unit-II (Descriptive Statistics) (5)

③ Enlarging knowledge and experience
Statistics help to enlarge the thinking & reasoning power of an individual and help them reach a rational conclusion.

Importance of Statistics:

(A) In Economics:

- ① Statistics help to formulate different laws in economics. e.g. Law of demand & supply, Ed etc. were developed using inductive method of generalisation.
- ② Statistics help to understand and formulate policies for macroeconomic problems of poverty, unemployment etc.
- ③ Statistics help in the study ~~study~~ of different market structures like perfect competition, monopoly etc. by comparing price, cost etc.
- ④ Statistics help to understand the behaviour of consumers, producers etc.

(B) In Business:

- ① Statistics provide guidelines and tools to know the feasibility, location availability, taxes, size of output turnover etc. before starting a business.
- ② Businessmen can estimate the demand for their products with the help of different statistical tools.

③

Unit-1

⑤

Introduction to statistics:

Nature, limitations & significance of statistics.
Collection of data - Primary and secondary data, Methods of data collection (primary data) classification and tabulation.

The subject of statistics involves the study of how numerical facts or data are collected, how they are analysed, and how they are interpreted. A major reason for collecting, analysing and interpreting data is to provide information necessary to make effective decisions.

Population and sample:

A 'population' is a collection of all items of interest in a particular study.
e.g. All the voters in a village for panchayat election.

A 'sample' is a portion of the population selected to represent the whole population.
e.g. A few voters are selected to represent all the voters.

Descriptive statistics: Statistical methods used to develop tabular, graphical, and/or numerical summaries of data are referred to as descriptive statistics.

Statistical inference: The process of using data from sample to draw conclusions about population is referred to as statistical inference.

Methods of data collection (Primary data)

Primary data is collected in experimental, descriptive research & in survey work. There are several methods used in primary data collection. Important ones are:

- ① observation method
- ② Interview method
- ③ Through questionnaires
- ④ Interview schedule
- ⑤ others.

Observation method:

This method is mostly used in behavioural science. Under this method, the information is sought by way of investigator's own direct observation without asking from the respondent. e.g. observing consumer's behaviour in the market.

In this method the subjectivity bias is eliminated if observation is done accurately. Secondly, this method relates to what is currently happening. Doesn't deal either with the past or future data.

Thirdly, this method doesn't require the respondent's verbal response is not necessary.

Limitations:

- (i) It's expensive
 - (ii) Provides limited information
 - (iii) Unforeseen factors may interfere with observation task
 - (iv) Some people are rarely accessible to direct observation.
- explain.

Interview method:

This method involves presentation and reply in terms of oral-verbal response. This method can be used through personal interview and is possible through telephone interviews. Interview may be direct personal investigation or indirect oral investigation.

Commissions + committees appointed by govt use the above method.

For conducting personal interviews, ^{in a structured way} a set of pre determined questions + highly standardised recording techniques are used.

Unstructured interviews do not follow the above. Here interviewer has much greater freedom.

Advantages

- ① More in-depth information can be obtained.
- ② Restructuring of the question is possible.
- ③ Personal information can be obtained.

Weakness

- ① Expensive
- ② Interviewer can be biased
- ③ More time consuming etc.

Questionnaire method: Questionnaire is sent to the person concerned with a request to answer.

⑧

Secondary data collection:

They are already available. Secondary data may be published or unpublished.

Published data (sources):
Publications by central & state governments, by foreign governments, technical & trade journals, books, magazines & newspapers, reports by research scholars, public records and statistics.

Researchers must look into the following things before collecting secondary data:

Reliability of data
Suitability of data
Adequacy of data etc.

Tabulation

Tabulation is a systematic and logical representation of figures in rows and columns ease statistical analysis. It is a method of organising data in tabular form. Tabulation could be simple or complex.

Essential parts of tabulation:
1. Table number
2. Title of the table
3. Headnote

It is presented just below the title. e.g. amounts in Rs, quantity in kg, etc.
Column headings or captions
Row headings or ~~captions~~ stubs.

Body of the table: This contains numeric information collected from investigated data
Foot note: Clarification about certain data.

Source note: The source from where the table information is taken.

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Rules of tabulation:

e.g. Population has increased.
Population has increased by 5%. (2)

② ~~presentation of facts in definite form.~~

③ Comparison of facts:

Comparison of facts and figures is an essential function of statistics.

Absolute figures can not provide concrete meaning.

e.g. Increase in population of different religion groups in India.

④ Forecasting:

Uncertainty is a part of business. Organisation & economy prepare themselves to face the uncertainties by forecasting the future occurrences. Proper & accurate forecasting reduce uncertainties. Time series analysis, interpolation etc. are used for projection of future.

Formulation and hypothesis testing. Testing hypothesis means testing a hypothesis scenario to understand the results.

Different statistical tools are used in formulating & testing the hypothesis.

(2)