

-: Statistics :-

Definition:-

It is a science of collecting, ^{COPSGD} ^(ascending or descending order) organizing, presenting, summarizing, generalizing & draw inferences of a data sets in which we are interested.

Observations:-

Any thing that can be measured or observed is called an observation.

Data:-

Collection of observation is called data

OR
Numbers / ~~observation~~ ^{measurements} that are collected as a result of observation.

Populations:-

A popⁿ is the set of all units of interest in a particular study.

Samples:-

A sample is a true representative part of popⁿ OR

It is a subset of data selected from the popⁿ

• Popⁿ results are based on sample results.

Parameters:-

A parameter is a numerical measurement describing some characteristics of a popⁿ.

e.g μ = popⁿ average, σ^2 = popⁿ variance.

Statistic:-

A statistic is a numerical measurement describing some characteristics of a sample.

e.g \bar{X} = sample average, s^2 = sample variance.

Variable:-

Any characteristic of a person, group or environment that can vary.

⇒ Types of Data:-

- (i) Data by nature
- (ii) Data by source.

(i) Data by Nature:-

- (a) Qualitative Data
- (b) Quantitative Data
- (c) Discrete Data
- (d) Continuous Data

(ii) Data by Source:-

- (a) Primary Data
- (b) Secondary Data

of source.

(a) Primary Data:- (Ungrouped data)

Data that have been originally collected (raw data) & have not undergone any sort of statistical treatment are called primary data.

- Collected directly from respondent
- Primary data collected through questionnaire/interview

(b) Secondary Data:-

Data that have undergone any sort of statistical treatment at least once.

i.e. The data that have been collected, classified, tabulated or presented in some form for certain purpose.

→ Data collected from NADRA to determine growth rate of Pakistan.

⇒ Data by Nature:-

(a) Qualitative Data

Qualitative data are observation that are non-numerical. It provides labels or name for a characteristic of an element.

(e.g. student performance, hair colour)

(b) Quantitative Data:-

Quantitative data are observation measured on numerical scale eg income, number of students.

(c) Discrete Data:-

Data whose possible values are countable is called discrete data. (In whole figure)
eg Number of members in a family, numbers of students in a class.

d) Continuous Data:-

Data whose possible values are uncountable & which may assume any value in interval is called continuous data
eg 2-4 infinite numbers.

eg Height both discrete & continuous.