

Chapter 2

Class 11th Economics
PART A (Statistics)

= Collection Of Data. =

= What is Data? =

Tools which help in reaching sound conclusion by providing information.

= Sources of Data. =

→ Primary source

→ Secondary source

= Why do we collect data? =

Data are comparative numerical facts and information therefore to reach a sound conclusion statistical investigation and collection of data is first and foremost.

= What is Primary Data? =

The data originally collected in the process of investigation are called Primary Data.
It is first hand Data.

= What is Secondary Data? =

Data which have been collected for some other purposes, by some other agencies are called secondary data.
It is the data which already exist.

= How do we collect Data? =

We collect data by asking questions from a large group of people.

And survey is the method of gathering information from individuals.

The most common instrument used in survey to ask question is Questionnaire / Interview Schedule

The questionnaire is either self administered or it is administered by the researcher (enumerator) or trained investigator.

= How to prepare a good questionnaire? =

→ As short as possible.

→ Easy and understandable

→ Comfortable in answering

→ General to specific questions.

→ Should contain options in answer.

→ Avoid use of Double negative Ex:- Don't you, wouldn't You as these result in biased response.

→ Should not contain alternative of answer.

→ Open ended questions allow for more individualised response

Q:- What is your opinion about globalisation?

= Modes of Data Collection. =

1. Primary Data.

→ Direct personal investigation

(Personally collected by investigator from a person whom the information to be obtained)

→ Indirect oral investigation

(Collected information from the person other than who is to be investigated)

- From Local sources.
(Investigator appoint local sources/person at different places)
- Mailing Method
(Questionnaire mailed to informants)
- Telephone Interview
(Over Call)
- Enumerator's Method.
Investigator appoint a trained person with questionnaire.

2. Secondary Data.

- Published Sources.
(Newspaper, Magazines, official sites of Department etc.)
- Unpublished Sources

== Merit - Demerits of Methods. ==

[Direct Personal Investigation]

(Merit)

- Reliable, More response,
- Uniformity of data,
- Accuracy of data,
- Relevant information

(Demerit)

- Don't cover vast area,
- Very expensive
- Time consuming
- Trained Investigator

[Indirect Oral Investigation]

(Merit)

- Wide Area Coverage
- Less Time, consuming.
- Cheaper.
- Simple & Convenient

(Demerit)

- Not reliable / less reliable
- Third party may be biased
- Witness may not be proper
- Large no. of witness required

[Information from local correspondent]

(Merit)

- Cheap & Economical
- Less time consuming
- Cover large area of investigation
- Convenient
- Good for purpose where estimate data is required

(Demerit)

- Less reliable Data
- High accuracy required the method fails.
- Lack of uniformity in data
- Correspondent must be trained

[Questionnaire's through mail]

(Merit)

- Cheapest Method.
- Ultra wide area coverage
- Uniformity in Data

(Demerit)

- Person must be educated
- May not respond.
- Time to think and may be biased.

[Enumerator's method]

(Merit)

- Uneducated person can provide information
- More reliable information
- Covers wide area.
- Unaffected by the personal bias of the investigator
- Chance of non-response decreases

(Demerit)

- Costly.
- Time consuming
- Trained Enumerator required
- Only used by big-organisation.
- Personal bias of enumerator can lead to wrong conclusion.
- Suitable only when no. of questions are fixed.

= Pilot Survey =

Pre-testing of questionnaire with small group of people, to know short coming of the questionnaire.

= Survey =

Method of gathering information from individuals is called survey.

Census Survey

A survey which includes every element of the population.
[population]
population or universe in statistics means totality of the items under study.

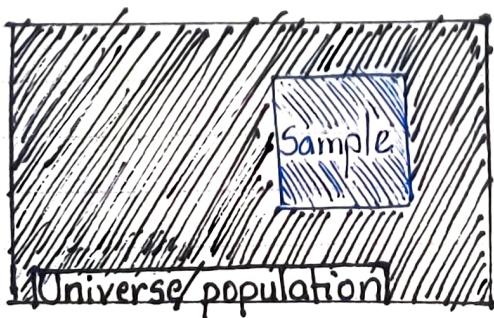
If any agency is interested about studying the total population in India, they have to conduct census survey all over India whether rural or urban areas.

It is carried out every ten year, which includes demographic data on birth & death rate, literacy, employment, life expectancy, size and composition of population etc. and published by Registrar General of India.

Sample Survey.

Some times to reach to a conclusion it is not possible survey the entire population, then the researcher decide to select a Representative sample.

Sample refer to a group or section of the population from which the information is to be obtained.
A good representative sample is capable to provide reasonably accurate information about the population at a much lower cost and shorter time.



Questions in Mind !!

How to Pick a good representative sample?

Method/Technique of Sampling.

A) RANDOM SAMPLING

(a) Simple or Unrestricted Random Sampling.

Every item of the population has equal chance of being selected.

Example → Lottery, dice etc.

There is no room of discrimination in simple random sampling.

Merits.

- > No personal bias.
- > Based on probability.
- > Increasingly, representative of population.
- > Accuracy can be assessed with the help of magnitude of sampling errors.

Demerits.

- > Not suitable for small samples.
- > Difficult to prepare sampling frame.

(b) Restricted Random Sampling.

Under this the samples are selected under certain restriction, hence it is not properly random.

Following technique/methods falls under restricted random sampling.

(i) Stratified random sampling.

Universe of the entire population is divided into "strata" means divided into groups.

Example:- Before selecting two class monitors the whole class is divided into two "strata" i.e. Boys & Girls.

Merits

- > Sample is more representative
- > Easy to organise & administer due to "strata"
- > Greater accuracy.

Demerits.

- > Not possible if information about the "strata" is unavailable
- > Stratification must be proper for sound conclusion.

(ii) Systematic Sampling.

Also known as quasi-random sampling. Under this method whole population is arranged in a systematic manner.

for ex:- Alphabetically
Geographically
Numerically etc.

And then every n^{th} item is chosen for sample.

Merits.

- > Simple method & generally result are satisfactory.
- > Re-checking can be done quickly
- > Saves time & efforts.

Demerits.

- > Possible only if complete list of items are available
- > Feasible/works only if items are systematically arranged.
- > Chances of bias are there

(iii) Cluster or Multistage sampling.

It involves dividing of large population into groups called cluster and drawing a sample of cluster to represent the population.

It is carried out in multiple stages, say two, three or four stages.

1st stage

Universe is divided into many clusters from which again certain cluster are selected at random.

2nd stage

The selected 1st stage sample are again sub-divided into some clusters from which again certain cluster are selected at random.

3rd stage

— Same —

and the process of division & sub-division of clusters and selection of multistage sample is carried out until the sample size is reduced to a reasonable extent.

Merits.

- > Very helpful in large scale survey.
- > Represent the population with reasonable accuracy.
- > Saves time & money.

Demerit

- > Division & sub-division is a quite difficult task.
- > The investigator need detailed knowledge about the universe for division & selection.

B) NON-RANDOM SAMPLING

In this all the items in the universe do not have equal chance of being selected.

Investigator selects samples on the basis of his judgement or convenience.

Following techniques fall under non-random sampling.

(i) Judgement Sampling

Selection of sample depends exclusively on the judgement of investigator.

It is also known as purposive or deliberate sampling.

Example:- An interview.

Merits.

- > Useful where personal judgement of investigator is important
- > Where small size sample is to be drawn.
- > Where detail observation is required.

Demerits.

- > Not based on probability, so doesn't guarantee accuracy.
- > Selection of item may be affected by personal bias.

(ii) Quota Sampling

Items of population are subdivided into various groups and then a quota is fixed, which means how many number of items to be selected from each group.

Fixing quota is a game of judgement.

Merits.

- > Provides satisfactory results.
- > Each part of population gets representation

Demerit.

- > Personal Bias
- > Useful if investigators are trained.

(iii) Convenience Sampling

In this the investigator gives special attention to his convenience.

For ex:- To estimate average height of Indians, if the investigator belongs to Delhi can take convenience sample from the Delhi state only.

This method of selecting the sample is also called 'chunk'

Merits.

- > Useful when universe is not properly defined.
- > Saves time, money & effort.

Demerits.

- > Sample items may not truly represent the universe
- > Result obtained are often less reliable.

LAW OF STATISTICAL REGULARITY

Law says, if a random sample of adequate size is selected from a large population, it tends to possess the same characteristics as those of the population.

LAW OF INERTIA OF LARGE NUMBER

According to this Law, the aggregate or averages obtained from a large group are more stable than the aggregates or averages obtained from smaller group.

In other words, the larger the size of the sample, the more accurate the results are likely to be.

STATISTICAL ERRORS

The difference between collected data and actual value of facts is referred to as Statistical Errors.

Sampling Errors

Difference between sample estimates & actual value of characteristic of the population.

Can be of two types:-

Biased Error

Error due to biasness in selecting samples.

Unbiased Error

Error occurred accidentally not due to biasness.

Non-Sampling Errors

By way of Error in data acquiring
Non-Response error
Measurement error.

* Key point

- > Magnitude of Sampling Error can be reduced by taking a larger sample.
- > But, a non-sampling Error cannot be minimized even by taking larger samples.

Census of India & NSSO

There are some agencies both at the National and State level to collect, process & tabulate the statistical data

Agencies of National Level are :-

- > National Sample Survey (NSS)/(NSSO)
- > Central Statistics Office (CSO)
- > Registrar General of India (RGI)
- > Directorate General of Commercial Intelligence and Statistics (DGCIIS)
- > Labour Bureau etc.

Census Of India

- Census of India provides most complete and continuous demographic record of population.
- Census is being regularly conducted since 1881.
- Census officials collect information about size & density of population, sex ratio, literacy, migration etc.
- Then the census data is interpreted and analysed to understand many economic & social issues in India.

National Sample Survey Office (NSSO)

- It was established by government to conduct nation-wide survey on socio-economic issues.
- Data collected by NSS are released through its quarterly journal "Sarvekshang".
- It provides periodic estimates of literacy, school enrolment, unemployment, maternity, child care etc.
- These information are used by government of India for planning purposes.