



SYLLABUS

Class – B.Com –II and B.B.A I year

Subject –Business Statistics

UNIT – I & II	Introduction to Statistics, Statistical Investigations, Laws of Statistics, Scope of Statistics, Limitations of Statistics Concept of Population and Sample, Types of data, Primary and Secondary data, Collection of data, Organization of data- Frequency tables and Frequency Distribution. Presentation of Data- Bar Digram, Pie Digram, Line Graph, Histograms & Frequency Polygons.
UNIT – III	Measurement of central tendency – Mode, Median and Geometric Mean, Harmonic Mean
UNIT IV	Measures of Dispersion- Range, Quartile Deviation, Mean Deviation, Standard Deviation and Basic Concept of Skewness, Time Series Ananlysis
UNIT – V	Correlation — Meaning, Definition and Types of Correlation. Karl Pearson's Coefficient of Correlation, Coefficient of determination, Spearman's Rank Correlation Coefficient. Simple Linear Regression — Lines of Regression, Index Numbers



UNIT — I& II STATISTICS

Introduction

• **Statistics** is generally used to mean quantitative aspects of data management but as a subject of study it refers to body of principles and procedures developed for collection, classification, summarization and meaningful interpretation and for the use of such data.

• The discipline is useful in converting random data to understandable information and aids in strategic business decision making.

Origin

Statistics has its origin in Latin word Status, Italian word Statista and German term Statistik all of which mean "Political State". In ancient times the beginning of Statistics was made to meet the requirements of State primarily and hence the name.

Meaning

The term **Statistics** is generally used in 2 senses-

1. Plural Sense
2. Singular Sense

Definitions: - "The classified facts relating the condition of the people in a state specially those facts which can be stated in members or in tables of members or in any tabular or classified arrangements."

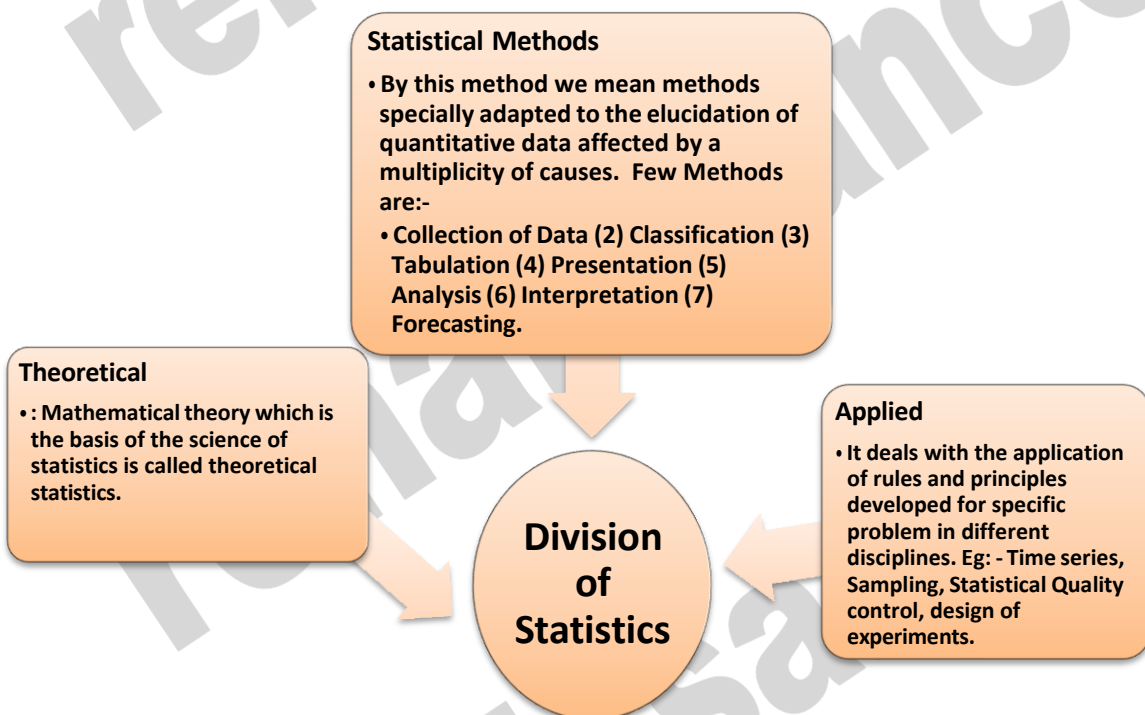
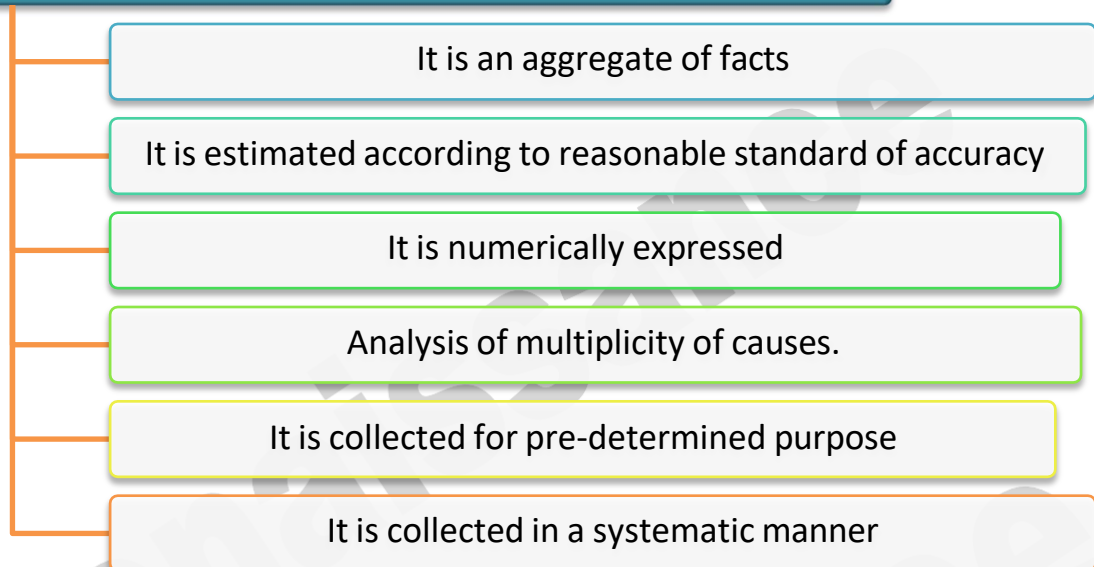
-Webster

"Statistics may be regarded as (i) the study of population (ii) The study of variation (iii) The study of method of reduction of data"

-R.A. Fisher



Nature /Features /Characteristics of statistics



Functions of Statistics:-

- It presents facts in a definite form.
- It simplifies mass of figures
- It facilitates comparison
- It helps in prediction
- It helps in formulating suitable & policies.

Scope of Statistics:-

1. Statistics and state or govt.
2. Statistics and business or management.



- Marketing
 - Production
 - Finance
 - Banking
 - Control
 - Research and Development
3. Statistics and Economics
- Measures National Income
 - Money Market analysis
 - Analysis of competition, monopoly, oligopoly,
 - Analysis of Population etc.
4. Statistics and science
5. Statistics and Research

Limitations:-

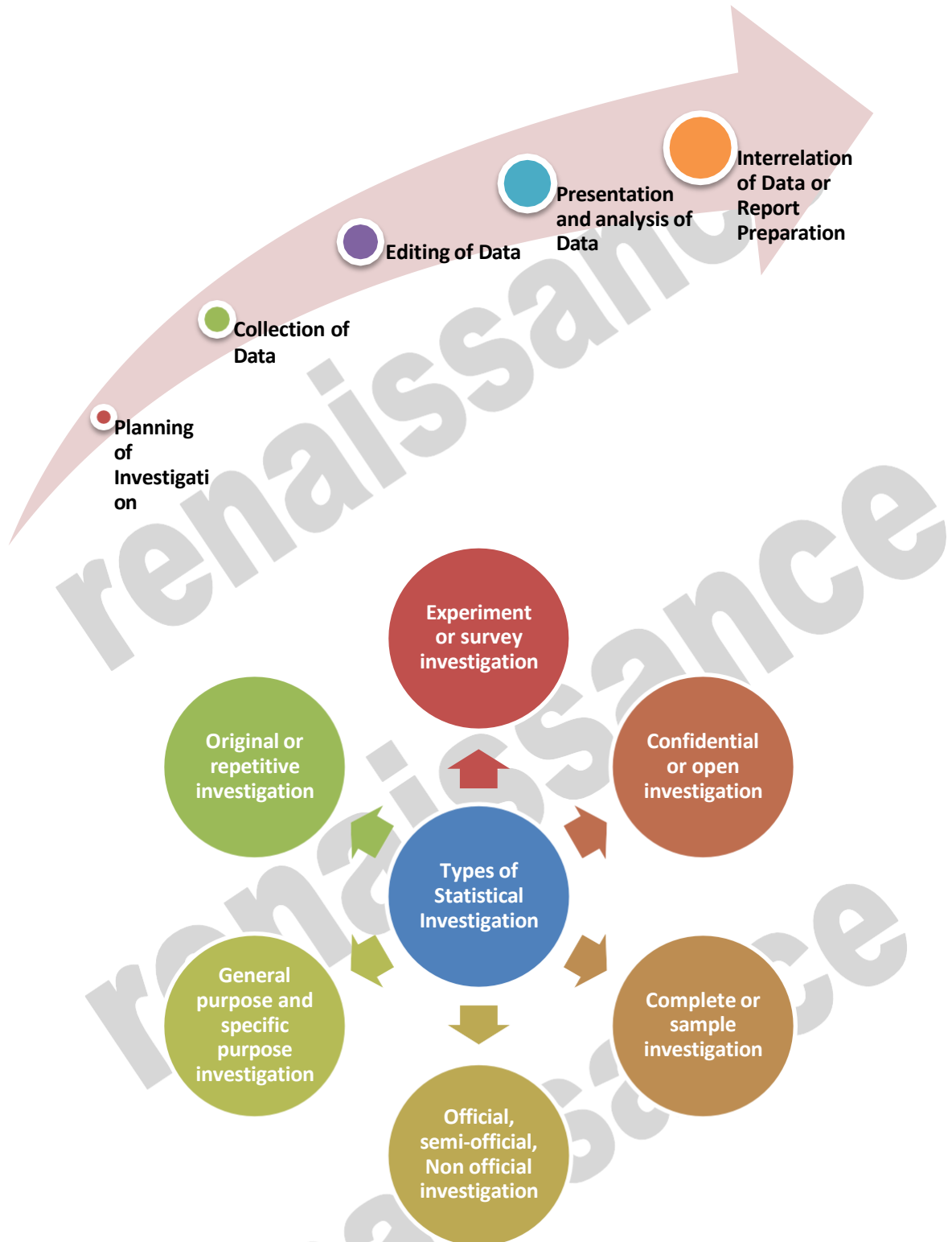
- (i) It is not deal with items but deals with aggregates.
- (ii) Only on expert can use it
- (iii) It is not the only method to analyze the problem.
- (iv) It can be misused etc.

STATISTICAL INVESTIGATION

Meaning: In general it means as a statistical survey.

In brief, it is Scientific and systematic collection of data and their analysis with the help of various statistical method and their interpretation.

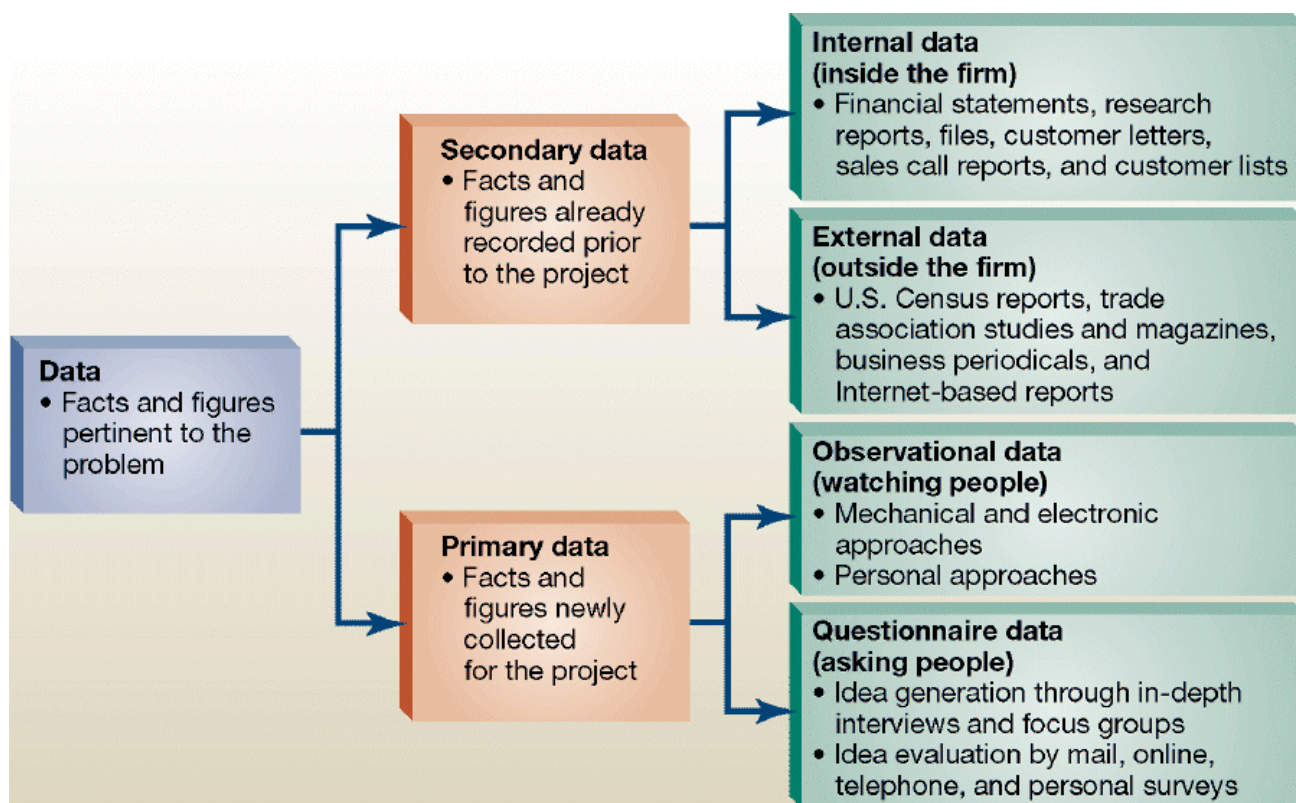
STAGES OF STATISTICAL INVESTIGATION:-



PROCESS OF DATA COLLECTION

Data: - A bundle of Information or bunch of information.

Data Collection: Collecting Information for some relevant purpose & placed in relation to each other.



Collection of Data: - It means the methods that are to be employed for obtaining the required information from the units under investigations.

Methods of Data Collection:- (Primary Data)

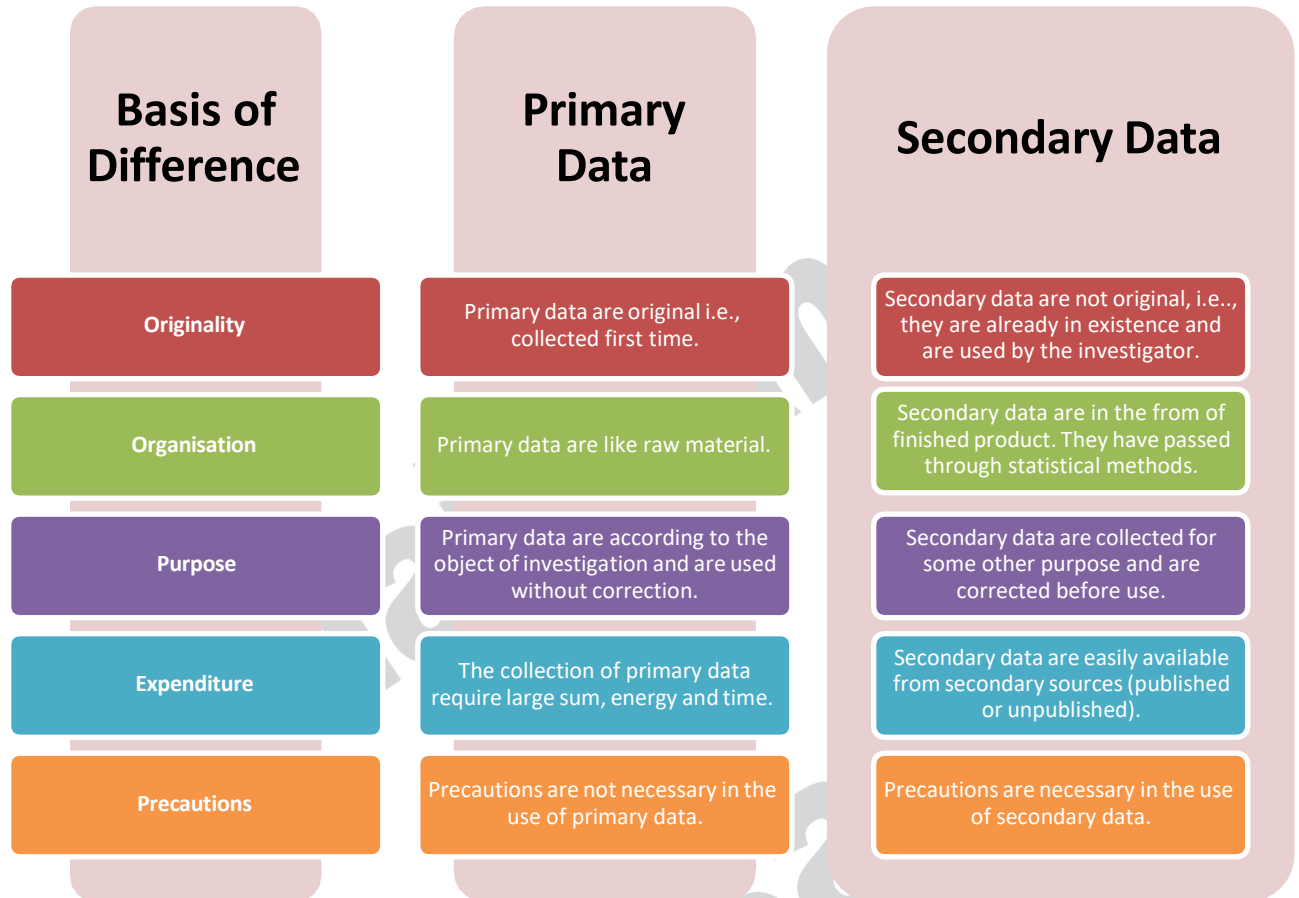
- Direct Personal Interviews
- By observation
- By Survey
- By questionnaires

Preparation of Questionnaires:-

This method of data collection is quite popular, particularly in case of big enquiries, it is adopted by individuals, research workers. Private and public organization and even by government also. A questionnaire consists of number of questions printed or type in a definite order on a form or set of forms. The respondents have to answer the question on their own.

Importance:-

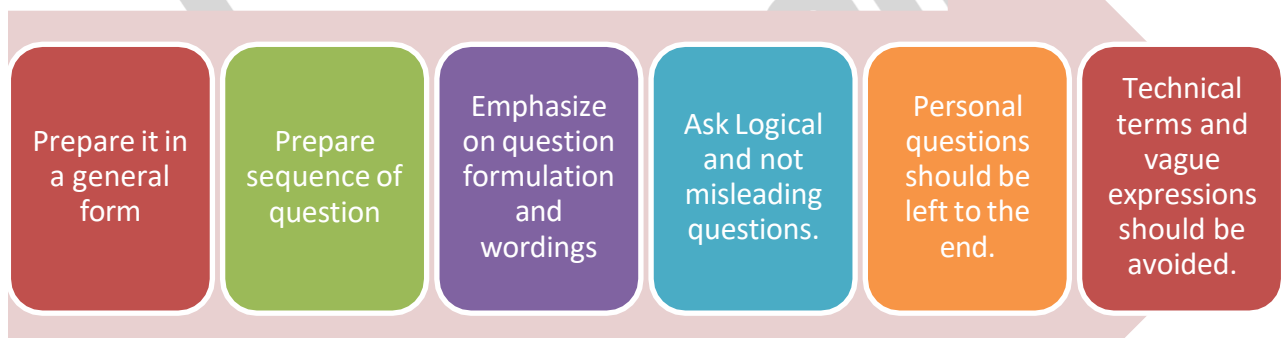
- i. Low cost and universal
- ii. Free from biases.
- iii. Respondents have adequate time to respond
- iv. Fairly approachable



Demerits:-

- (i) Low rate of return
- (ii) Fill on educated respondents
- (iii) Slowest method of Response

Steps in construction of a questionnaire: It is considered as the heart of a survey operation. Hence it should be very carefully constructed





Example :

Key points of a good questionnaire

How old are you?

How old are you?

☐ under 18 years ☐ 18 - 30 years ☐ over 30 years

Don't you agree that watching too much TV is bad for you?

☐ yes ☐ no

Watching too much TV is bad for you.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree

Classification & Tabulation of Data

After collecting and editing of data an important step towards processing that classification. It is grouping of related facts into different classes.

Types of classification:-

- i. **Geographical:-** On the basis of location difference between the various items. E.g. Sugar Cave, wheat, rice, for various states.
- ii. **Chronological:-** On the basis of time
e.g.-

Year	Sales
1997	1,84,408
1998	1,84,400
1999	1,05,000

- iii. **Qualitative classification:-** Data classified on the basis of some attribute or quality such as, color of hair, literacy, religion etc.
- iv. **Quantitative Classification:-** When data is quantify on some units like height, weight, income, sales etc.

Tabulation of Data

A table is a systematic arrangement of statistical data in columns and Rows.

Part of Table:-

1. Table number
2. Title of the Table
3. Caption
4. Stub
5. Body of the table
6. Head note
7. Foot Note

Types of Table:-

(i) Simple and Complex Table:-

(a) Simple or one-way table:-



Age	No. of Employees
25	10
30	7
35	12
40	9
45	6

(b) Two way Table

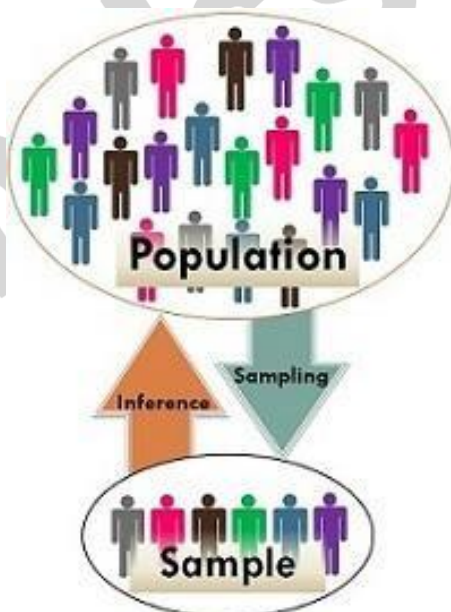
Age	Males	Females	Total
25	25	15	40
30	20	25	45
35	24	20	44
40	18	10	28
45	10	8	18
Total	97	78	175

2) General Purpose and Specific Purpose Table:-General purpose table, also known as the reference table or repository tables, which provides information for general use or reference.

Special purpose are also known as summary or analytical tables which provides information for one particular discussion or specific purpose.

METHODS OF SAMPLING

Meaning: - The process of obtaining a sample and its subsequent analysis and interpretation is known as sampling and the process of obtaining the sample is the first stage of sampling.



The various methods of sampling can broadly be divided into:

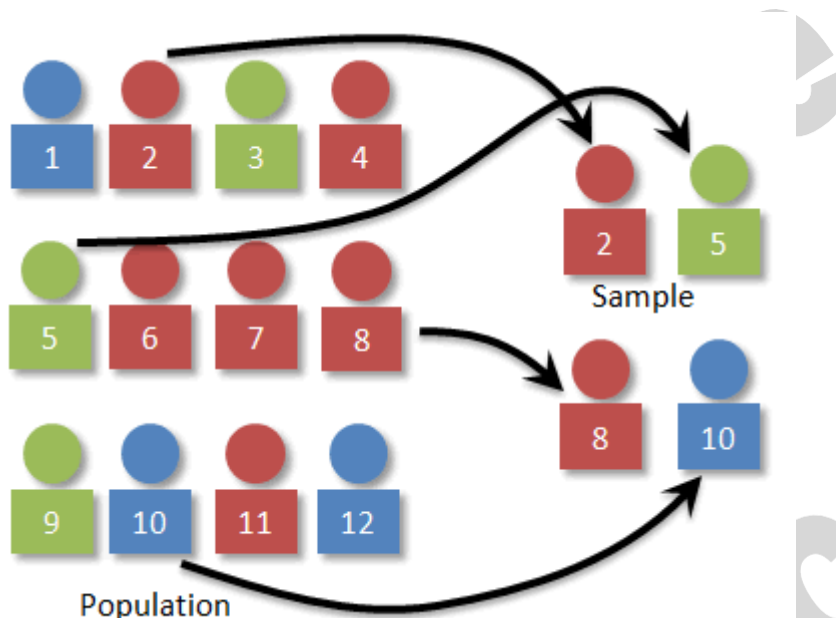
- Random sampling method
- Non Random sampling method

Random Sampling Method



I Simple Random Sampling: - In this method each and every item of the population is given an equal chance of being included in the sample.

(a) Lottery Method (b) Table of Random Numbers



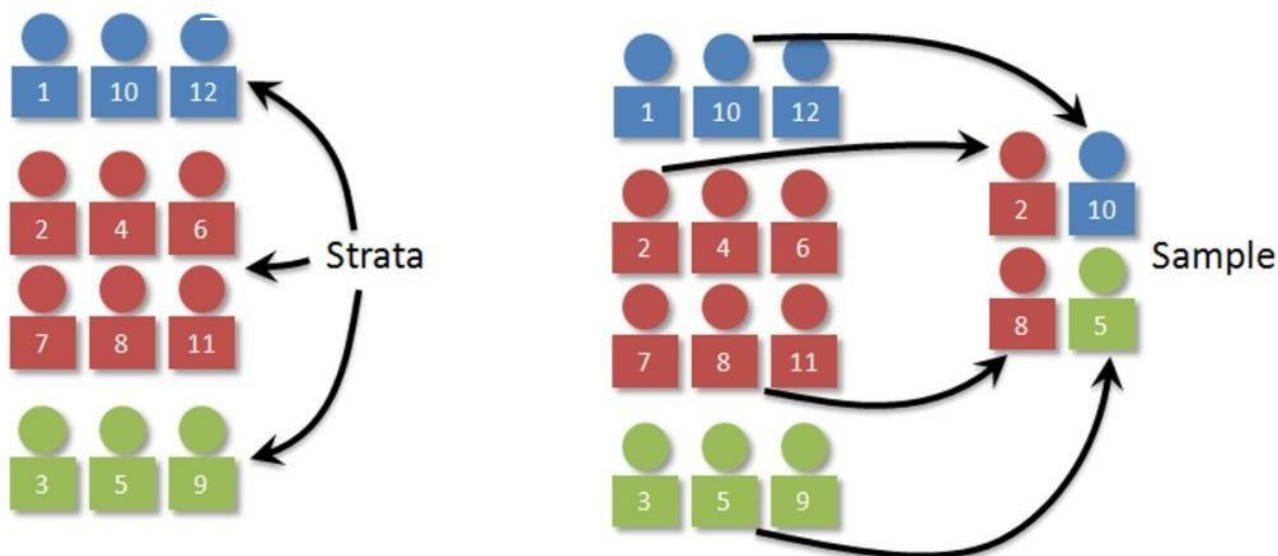
Merits:

- Equal opportunity to each item.
- Better way of judgment
- Easy analysis and accuracy

Limitations:

- Different in investigation
- Expensive and time consuming
- For filed survey it is not good

II Stratified Sampling:- In this it is important to divided the population into homogeneous group called strata. Then a sample may be taken from each group by simple random method.



Merit:- More representative sample is used.

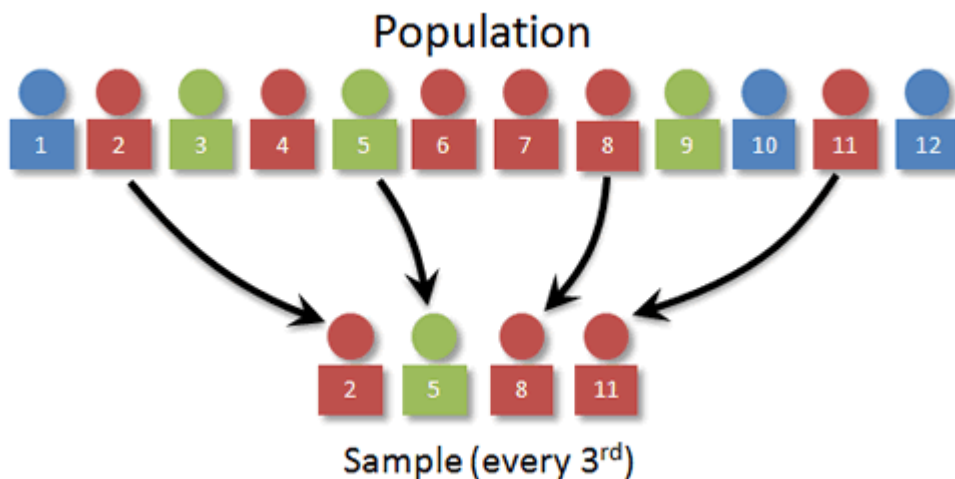


Grater accuracy

Geographically Concentrated

Limitations: Utmost care must be exercised due to homogeneous group deviation. In the absence of skilled supervisor sample selection will be difficult.

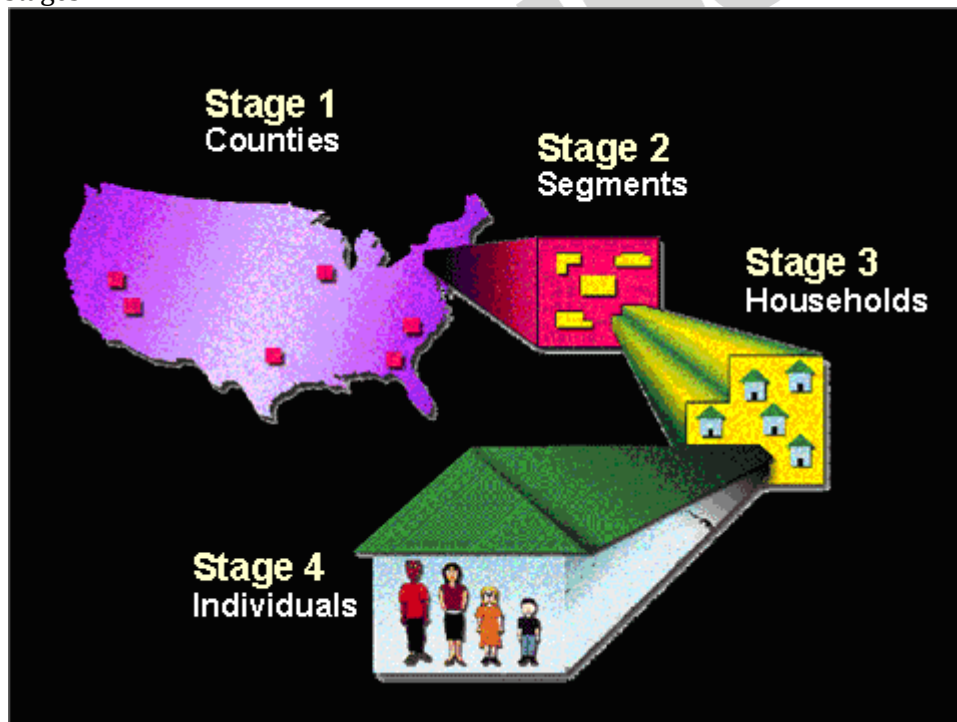
III Systematic Sampling:- This method is popularly used in those cases where a complete list of the population from which sampling is to be drawn is available. The method is to select kth item from the list where k refers to the sampling interval.



Merits: - It can be more convenient.

Limitation: - Can be Biased.

IV Multi- Stage Sampling: - This method refers to a sampling procedure which is carried out in several stages.



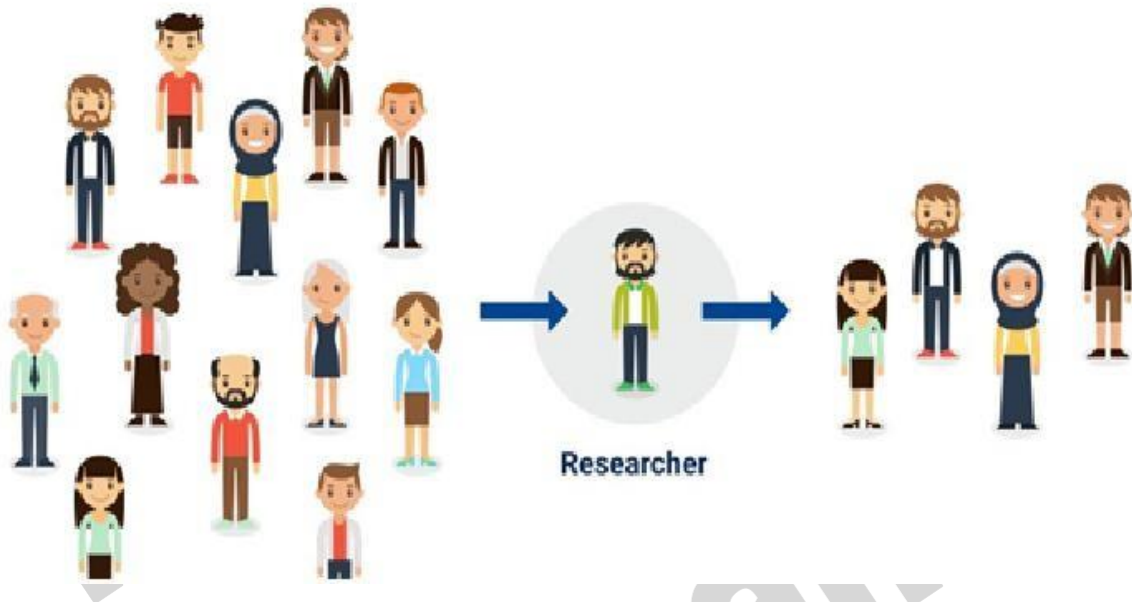
Merit: - It gives flexibility in Sampling

Limitation: - It is difficult and less accurate

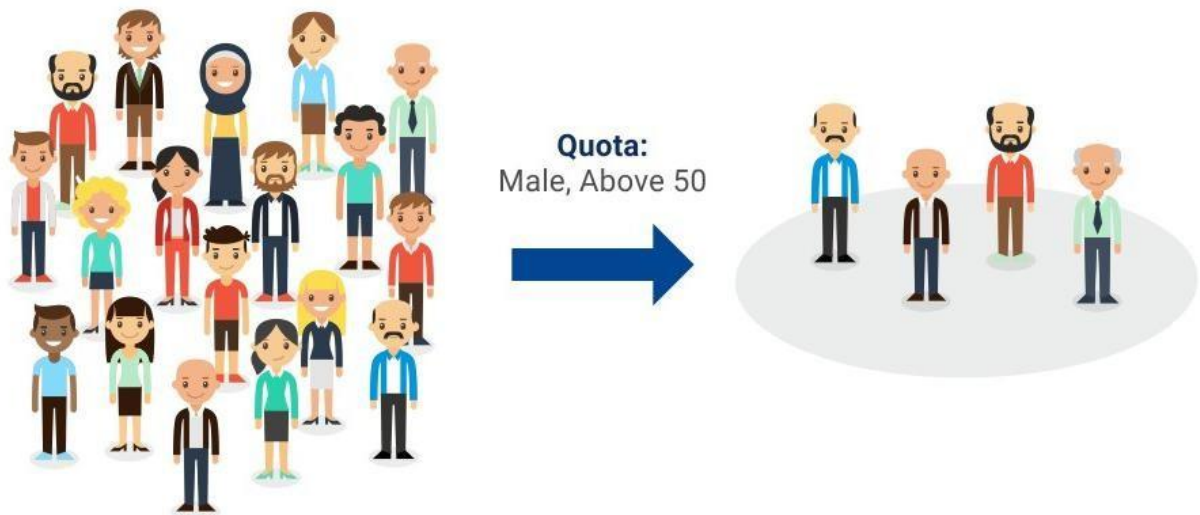


Non Random Sampling Method:-

- I. **Judgment Sampling:** - The choice of sample items depends exclusively on the judgment of the investigator or the investigator exercises his judgement in the choice of sample items. This is a simple method of sampling.



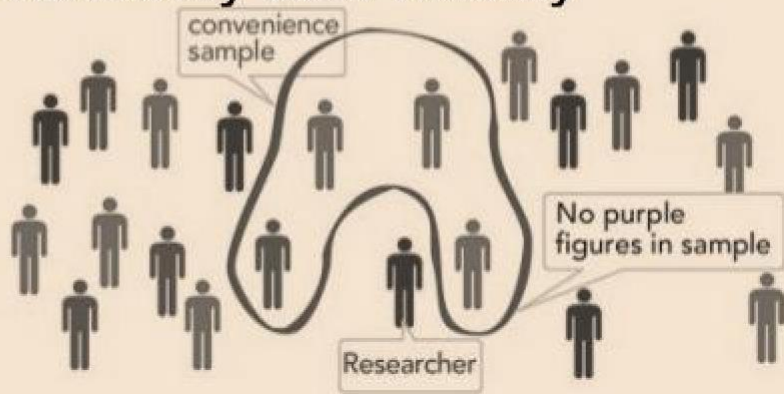
- II. **Quota Sampling:** - Quotas are set up according to given criteria, but, within the quotas the selection of sample items depends on personal judgment.



- III. **Convenience Sampling:** - It is also known as chunk. A chunk is a fraction of one population taken for investigation because of its convenient availability. That is why a chunk is selected neither by probability nor by judgment but by convenience.



select any members of the population who are conveniently and readily available



Size of Sample:- It depends upon the following things:-

Cost aspects.

The degree of accuracy desired.

Time, etc.

Normally it is 5% or 10% of the total population.

Limitation of overall sampling Method:-

Some time result may be inaccurate and misleading due to wrong sampling.

Its always needs superiors and experts to analyze the sample.

It may not give information about the overall defects. In production or any study.

It Becomes Biased due to following reason:-

- (a) Faulty process of selection
- (b) Faulty work during the collection of information
- (c) Faulty methods of analysis etc.