

Data

Type and Characteristics

- **Data – A set of values recorded on one or more observations**
 - Primary : collected by investigator
 - Secondary : Collected from another source
- **Sample – A small representative fraction of a population drawn by using suitable method**
- **Population – A population is the group of individuals from which a sample is drawn**
 - In research, it is not practical to include all members of a population
- **Parameters – Numerical quantities from a population representing important characteristics**
- **Observation – Measurement of events**

Statistical enquiry or Statistical investigation

Stage 1 Planning of investigation

Stage 2 Collection of data

Stage 3 Editing of data

Stage 4 Presentation of data

Stage 5 Analysis of data

Stage 6 Interpretation of data and preparation of report

Statistical Investigation

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graph TD; A[Statistical Investigation] --- B[1. Planning]; A --- C[2. Collection of data]; A --- D[3. Editing of data]; A --- E[4. Presentation of data]; A --- F[5. Analysis of data]; A --- G[6. Interpretation of data];
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**1.
Planning**

**2.
Collection
of data**

**3. Editing of
data**

**4. Presentation
of data**

**5. Analysis
of data**

**6. Interpretation
of data**



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graph TD; A[Statistical Investigation] --> B[2. Collection of data]; B --> C[A. Primary data]; B --> D[B. Secondary data];
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Statistical Investigation

**2.
Collection
of data**

**A. Primary
data**

**B.
Secondary
data**

2. DATA Collection

Primary Data – Collected by investigator

- Direct personal
- Indirect oral
- Through correspondents
- Questionnaire
- Experiments
- Census
- Sampling

Secondary data – Obtained by sources

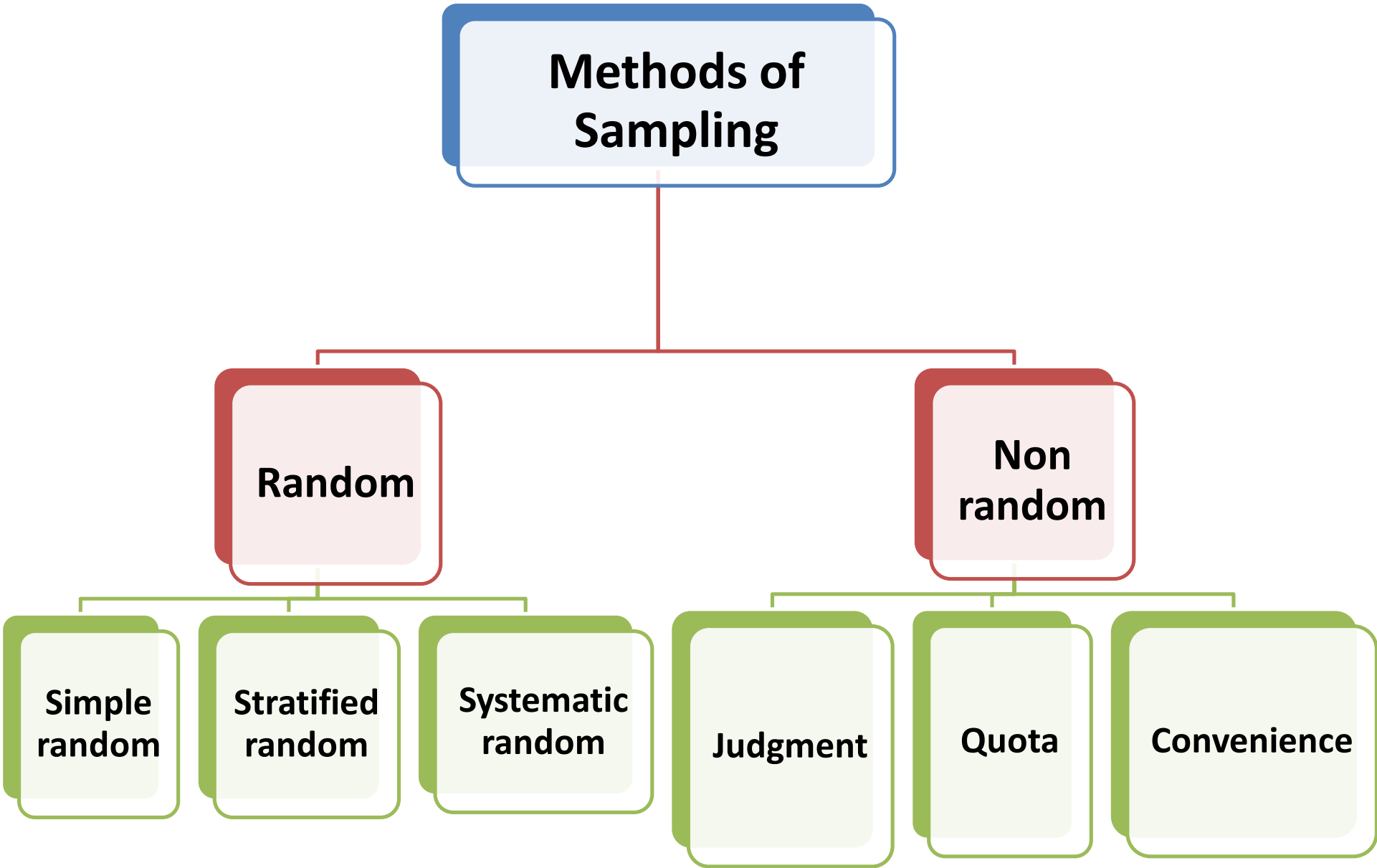
- International publication
- Govt. Publication
- Semi official publication
- Committee reports
- Private Publication

Sampling

- **A method of collection of data from a large population**
- **It is method of getting a representative fraction of a population**

Ex.

- ✓ **One rice is tested from a pot to arrive a conclusion**
- ✓ **One grape is enough to buy a bunch**
- ✓ **Length of leaves can be calculated by measuring just 10 leaves**



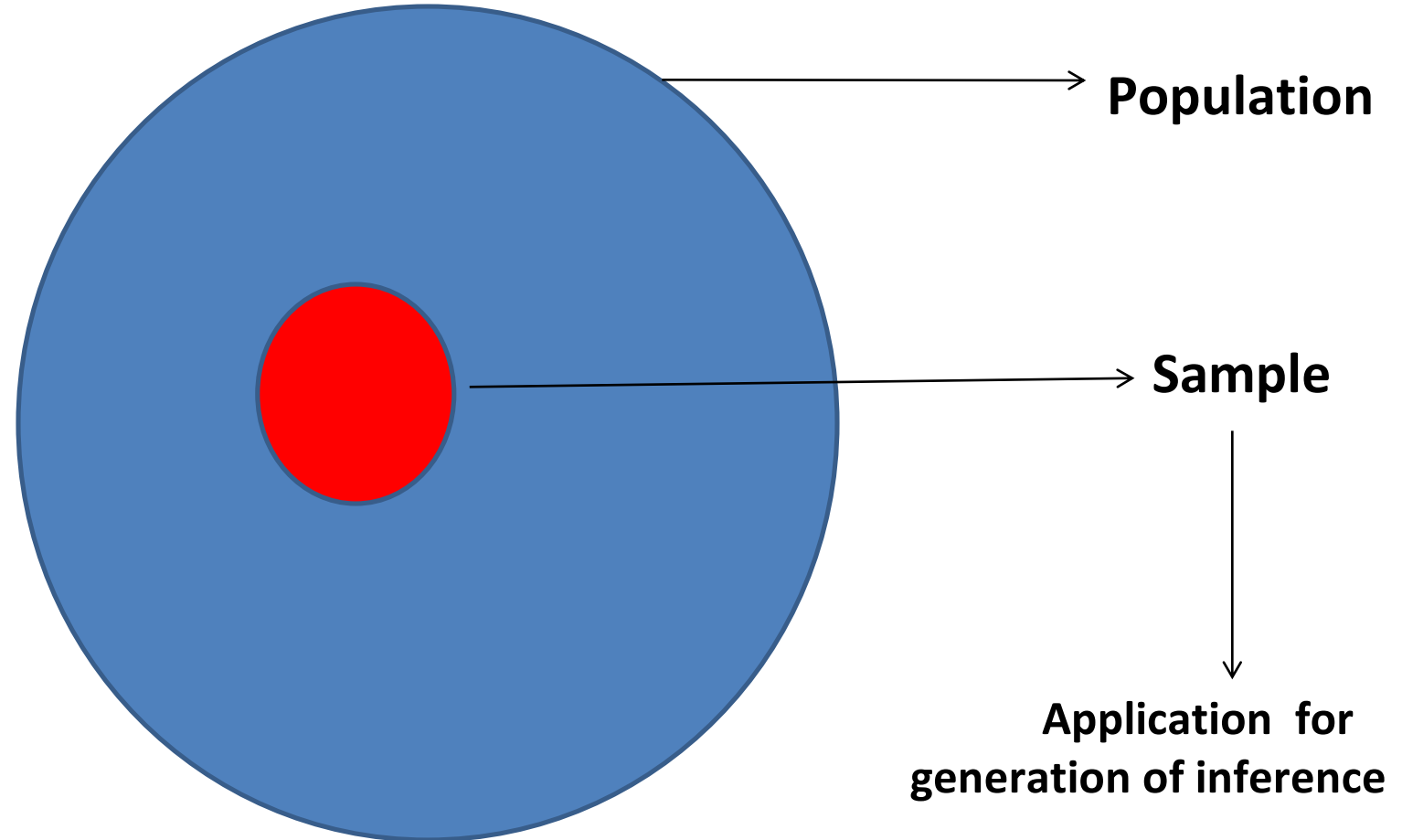
Random Sampling

- **Simple Random sampling – for uniform populations**
 - ✓ Lottery method – neutral and unbiased
 - ✓ Random sampling numbers – Assign serial number to each unit have a chance to be included in the sample
- **Stratified Random sampling – for heterogeneous populations**
- **Systematic Random sampling – for some special or temporal populations**

Non –Random Sampling

- **Judgment sampling – based on some criteria for selection**
- **Quota sampling – based on specified characteristics**
- **Convenience sampling – also known as chunk , based on place, time and availability of resources**

Reliability of sample



Advantages and Disadvantages of Sampling

- More economical, time saving
- High degree of accuracy
- Less number of investigators required
- More scientific and reliable
- Most suited for places where census cannot be applied

- Not suitable for interested characteristics
- A careful, proper plan is needed
- Biased or misleading results may occur
- Personal expertise is needed for selection of appropriate method
- Sources of error are large

Statistical Investigation

3. Data Editing

A.
Geographical
Data

B.
Chronological
Data

C.
Qualitative
Data

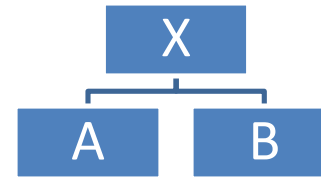
D.
Quantitative
Data

3. Editing of Data

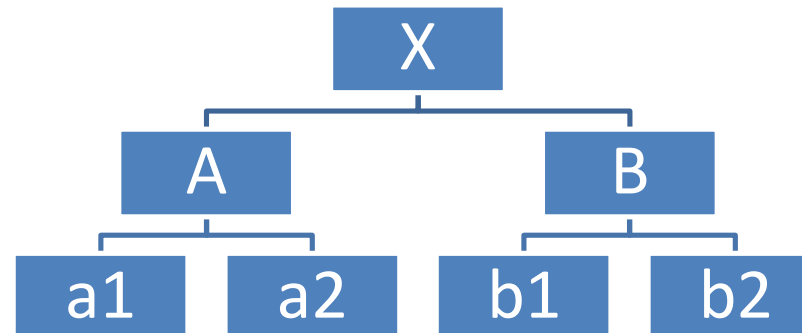
- **To condense the mass of data**
- **To present the facts in a simple form**
- **To bring out clearly the similarities and dissimilarities**
- **To facilitate comparison and relationship**
- **To assist the further analysis**

Types of data Classification

- Geographical data – Country, State, District etc.
- Chronological data – Years, Months, Days, Hours etc.
- Qualitative data – Descriptive as colour, gender etc.
 - Simple – Two classes



- Manifold – Many classes



- Quantitative data – Numeric values as age, height, weight, number, size etc.

Statistical Investigation

4. Presentation of data

A. Tabular

B. Diagrammatic

C. Graphical