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## Planning for Collection of Statistical Data

Planning for the collection of statistical data is a crucial step in any statistical investigation. It involves systematic preparation to ensure that the data collected is relevant, accurate, and sufficient for analysis.

- **Objective and Scope of Statistical Investigation:** Clearly defining the purpose and boundaries of the study.
- **Sources of Information:** Identifying where the data will be obtained from.
- **Time and Type of Statistical Enquiry:** Deciding when and how the data will be collected.
- **Determination of Statistical Tools:** Selecting appropriate methods and instruments for data collection and analysis.
- **Degree of Accuracy:** Establishing the level of precision required in the data.

This planning ensures that the data collection process is efficient and effective, minimizing errors and biases.

## Sources of Data

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Data can be sourced from two main categories:

- **Internal Sources:** Data collected from within the organization or study area.
- **External Sources:** Data obtained from outside the organization, which can be further divided into:
  - **Primary Data:** Original data collected firsthand for the specific purpose of the study.
  - **Secondary Data:** Data previously collected for other purposes but used for the current study.

Difference Between Primary and Secondary Data:

Basis	Primary Data	Secondary Data
Meaning	Data collected firsthand for a specific study.	Data collected earlier for other purposes.
Source	Direct from respondents or observations.	From published or unpublished records.
Originality	Original and authentic.	Not original; may be modified.
Cost	Generally high due to collection efforts.	Relatively low or no cost.
Availability	May be time-consuming to collect.	Readily available.
Adjustment	Can be tailored to study needs.	Limited scope for adjustment.

## Methods of Collection of Primary Data

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Primary data collection methods include:

- **Direct Personal Observation:** Observing the subject or phenomenon directly.
- **Indirect Oral Investigation:** Collecting data through verbal communication.
- **Telephone Interview:** Gathering information via phone calls.
- **Information through Local Sources & Correspondents:** Using local contacts to obtain data.
- **Mailed Questionnaires:** Sending questionnaires by mail for respondents to fill.
- **Questionnaires Filled by Enumerators:** Trained personnel collect data by filling questionnaires during field visits.

## Selection of Appropriate Method

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The choice of data collection method depends on:

- **The Nature of Investigation:** Type and complexity of data required.
- **Object and Scope of Enquiry:** Purpose and extent of the study.
- **Financial Resources:** Budget available for data collection.
- **Degree of Accuracy Desired:** Precision needed in data.
- **Time Factor:** Time available for data collection.

## Qualities of a Good Questionnaire

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- Brief and to the point.
- Simple, clear, and unambiguous questions.
- Appropriate nature of questions (open or closed).
- Use of proper and understandable words.
- Questions should be answerable by the informant.
- Questions capable of objective answers.
- Should not hurt sentiments or communities.
- Avoid personal or sensitive questions.
- Proper sequence of questions.
- Clear instructions for filling the questionnaire.
- Well-set format and layout.

- Tested for accuracy through pilot surveys.

## Collection of Secondary Data

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Secondary data can be:

- **Published:** Data available in official publications, reports, and documents.
- **Unpublished:** Data found in diaries, letters, unpublished biographies, etc.

## Published Sources of Data

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- Publications of international bodies.
- Government publications.
- Reports of committees and commissions.
- Publications and reports of trade associations and chambers of commerce.
- Semi-government publications.
- Private publications.

## Unpublished Sources of Data

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Includes diaries, letters, and unpublished biographies which may provide valuable information not available elsewhere.

## Reliability of Secondary Data

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When using secondary data, it is important to assess:

- Whether the data are reliable and authentic.
- Whether the data are suitable for the intended purpose.

- Whether the data are adequate and sufficient.

## Important Sources of Secondary Data in India

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- **Census of India:** Provides comprehensive demographic data. The first census after independence was conducted in 1951.
- **National Sample Survey Organisation (NSSO):** Conducts nationwide surveys on socio-economic issues.

## Techniques of Data Collection: Census and Sample Investigation

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There are two main techniques for data collection:

- **Census Method:** Collecting data from every unit of the population or universe.
- **Sample Survey:** Collecting data from a representative subset of the population to infer about the whole.

## Census Survey

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Census survey involves complete enumeration of all units in the universe related to the study.

- **Advantages:**
  - More accurate and reliable data.
  - Allows intensive study.
  - Suitable for diverse information.
- **Demerits:**
  - Costly and time-consuming.
  - Requires more labor.
  - Not feasible in some situations.

# Merits and Demerits of Sample Investigation

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- **Merits:**

- Reduced cost.
- Faster data collection.
- Greater scope and flexibility.
- Can provide detailed enquiry.
- Administrative convenience.
- Often the only feasible method.

- **Demerits:**

- Possibility of misleading conclusions.
- Difficulty in selecting a truly representative sample.
- Requires specialized knowledge.
- Challenges in restricting study to sample only.
- Difficulty in framing an appropriate sample.

## Essentials of Sampling

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- **Representativeness:** Sample should reflect the population.
- **Independence:** Selection of one unit should not influence another.
- **Homogeneity:** Units should be similar in characteristics.
- **Adequacy:** Sample size should be sufficient.
- **Similar Regulating Conditions:** Conditions should be uniform across units.

## Methods of Sampling

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- Random Sampling Method
- Purposive or Deliberate Sampling Method
- Mixed or Stratified Random Sampling Method
- Systematic Random Sampling Method
- Extensive Sampling Method
- Multi-stage Sampling Method / Cluster Sampling
- Quota Sampling Method
- Convenience Sampling Method

