

UNIT-I: Introduction To Statistics

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Definition of Statistics

Statistics is the discipline that concerns the collection, organization, analysis, interpretation, and presentation of data.

Basic Objectives

1. To summarize large sets of data efficiently.
2. To make inferences about a population based on sample data.
3. To assess relationships between variables.
4. To provide a basis for making decisions under uncertainty.

Applications in Various Branches of Science

1. Medicine: Analyzing clinical trial data.
2. Economics: Studying market trends.
3. Engineering: Quality control and reliability testing.
4. Social Sciences: Survey analysis and behavioral research.

Collection of Data

Data can be classified into two types:

1. Internal and External Data
 - Internal: Data collected from within an organization.
 - External: Data collected from sources outside the organization.
2. Primary and Secondary Data
 - Primary: Data collected firsthand through experiments, surveys, or observations.
 - Secondary: Data collected from published sources, research papers, and government records.

Population and Sample

1. Population: The complete set of all items or individuals of interest.
2. Sample: A subset of the population chosen for analysis.
3. Representative Sample: A sample that accurately reflects the characteristics of the population, ensuring valid statistical inferences.

