APPLIED STATISTICS: MEASUREMENT OF CENTRAL TENDENCY
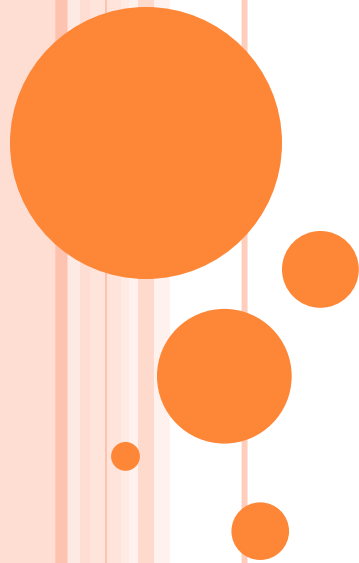
Understanding Mean, Median, and Mode

B. Praveen Doss

Asst. Professor

YMCA College of Physical Education

Chennai

INTRODUCTION TO CENTRAL TENDENCY

Definition:

- **Central tendency refers to a central value or typical value for a probability distribution.**

Purpose:

- **- Summarizes data with a single value.**

- **- Provides insight into the general trend of the dataset.**

Common Measures:

- **- Mean**

- **- Median**

- **- Mode**

MEAN (ARITHMETIC AVERAGE)

- Definition:
- The mean is the sum of all observations divided by the number of observations.

- Formula:
- Mean = Σx / N

where:

- $-\Sigma x$ = Sum of all data points
- - N = Number of observations

- Example:
- Data: 2, 4, 6, 8
- Mean = (2+4+6+8)/4 = 5

MEDIAN

- Definition:
- The median is the middle value when data is ordered from smallest to largest.

- Steps:
- 1. Arrange data in ascending order.
- 2. If the number of observations is odd, median = middle value.
- 3. If even, median = average of two middle values.

- Example:
- Data: 1, 3, 7, 9, 11
- Median = 7
- Data: 1, 3, 7, 9
- Median = (3+7)/2 = 5

MODE

- Definition:
- The mode is the value that appears most frequently in a dataset.

- Characteristics:
- - A dataset can have one mode (unimodal), two modes (bimodal), or more.
- - If no value repeats, the dataset has no mode.

- Example:
- Data: 2, 4, 4, 6, 8
- Mode = 4

COMPARISON OF MEASURES

- Mean:
- - Affected by extreme values (outliers).
- - Used for continuous data.

- Median:
- - Not affected by outliers.
- - Represents the 50th percentile.

- Mode:
- - Represents the most frequent value.
- - Useful for categorical data.

APPLICATIONS IN STATISTICS

- Common Uses:
- - Mean: Analyzing average performance, income, etc.
- - Median: Useful in skewed distributions like income levels.
- - Mode: Identifying most common categories (e.g., product preferences).

- Example:
- In a class of students:
- - Mean: Average score.
- - Median: Midpoint score.
- - Mode: Most common score.

CONCLUSION

- Summary:
- - Measures of central tendency summarize datasets with a single value.
- - Choice of measure depends on data type and distribution.

- Importance:
- - Provides insights into the central trend of data.
- - Foundation for further statistical analysis.

REFERENCES

- Include references and sources, such as textbooks or academic articles on statistics.