

## Statistics for Economics

### Measures of Central Tendency

#### **What is the mean, median, and mode?**

The mean is the average of a set of numbers calculated by adding them together and dividing by the count of numbers.

The median is the middle value of a set of numbers when they are arranged in order.

The mode is the value that appears most frequently in a set of numbers.

**In a class of 20 students, the following scores were obtained in a test: 12, 15, 18, 20, 20, 21, 22, 23, 24, 25, 25, 26, 27, 28, 30, 30, 32, 35, 38, 40. Calculate the mean, median, and mode of the scores.**

- Mean:  $(12 + 15 + 18 + \dots + 40) / 20 = 531 / 20 = 26.55$   
(rounded to two decimal places)
- Median: The middle values are 25 and 26, so the median is  $(25 + 26) / 2 = 25.5$ .
- Mode: The mode is 20 and 25 as they both appear most frequently.

**When would you use the median instead of the mean to describe a set of data?**

- The median is often used instead of the mean when the data set contains outliers or extreme values that could skew the mean. The median is more robust to outliers and gives a better representation of the central tendency in such cases.

**What does it mean if the mean is greater than the median?**

If the mean is greater than the median, it typically indicates that the data is right-skewed, with a few large values pulling the mean higher than the median.

**Which is a better measure to calculate the income level of households in an economy, mean or median? Explain**

Median household income is a better measure of income level in a population.

Unlike the mean, which can be skewed by extremely high or low incomes, the median provides a more representative value because it is the income level that separates the higher half of incomes from the lower half. This makes it a useful metric for understanding income distribution and inequality within a society.

The information is also crucial for policymakers when designing economic policies and social welfare programs.

**Give me a real world application of mode in consumer behaviour.**

Mode can be used in analysing consumer preferences and market research.

For example, consider a market researcher studying the preferred brand of a certain product among a group of consumers. The mode, or the most frequently occurring brand, can provide valuable insights into consumer behaviour and market trends.

Knowing the mode helps businesses understand which brand is most popular among consumers, which can influence marketing strategies, product development, and inventory management. It can also help businesses identify potential opportunities for growth or areas where they may need to improve to remain competitive in the market.