Measure of Central Tendency or Averages

Def

A measure of central Tendency is a single value that attempts to describe a set of data by identifying the central position with in that set of data

Note

We calculate averages because it is easier to explain in terms to explain in terms of averages to a common man instead of a bilk of data. e.g. when we heard on television that a batsman has scored at an average of 45 runs per match in 100 matches that he played we can understand that in some matches he might have scored more than 45 runs and in some matches less than 45.

So it becomes easier to grasp the data in mind while talkig in terms of averages.

Characteristic of a good measure of Central Tendency

- **I.** It should be rigidly defined by a mathematical formula
- **II.** It should be easy to calculate and simple to understand.
- **III.** It should be based on all the obesrvations of data.
- **IV.** It should be capable of future algebraic treatment.
- **V.** It should not be effected by extreme observations
- **VI.** It should be least effected by flucations of sampling.

Different Types of Measures

The most common types of averages are

- **I.** Arthimatic mean or simply mean
- **II.** Geomatric mean
- **III.** Harmonic mean
- **IV.** Median
- **V.** Mode

The first three Types are mathematical in a character and given an indication of the magnitude of the observed values .The Fourth type indicates the middle position while the last provides information about the most frequent value in the distribution or the data set.

Arthimatic Mean

The arthimatic mean or simply the mean is most familiar average

It is defined as a value obtained by dividing the sum of all observation by their Nums

$$\text{Mean} = \frac{\text{Sum Of All the Observation}}{\text{Num of the Observation}}$$

The mean may correspond To either Pop or Sample From the Pop.

If Given Set of Observations represents a Pop, The Mean Is Called Pop Mean. Usually Denoted By MU "μ"

$$\mu = \frac{X_1, X_2,,,,,,,,,,X_n}{N}$$

$$\mu = \frac{\sum X_i}{N}$$

Where $\mathcal{E}$ is the Summation

If Given Set of Observation Represents a sample the mean is called sample Mean, Usually Denoted by placing a bar over the symbol used to represent the observation or the variable

$$\overline{X} = \frac{X_1, X_2, \ldots\ldots\ldots X_n}{n}$$

$$\overline{X} = \frac{\sum X_i}{n}$$

The marks obtained by 9 Students Are given below

45,32,37,46,39,36,41,48,36

$$\overline{X} = \frac{\sum X_i}{n}$$

$$\overline{X} = \frac{45+32+37+46+39+36+41+48+36}{9}$$

$$\overline{X} = \frac{360}{9}$$

$$\overline{X} = 40$$