

Measures of central tendency, very often are not fully representative of a given set of data. This happens when the extent of variation of individual values in relation to the average

eg. if we observe the following two series

Series-A : 35 39 41 42 43

Series-B : 10 18 35 57 80

having mean 40, of the both the series.

Although the mean is 40, in the series A the minimum value is 35 and the maximum value is 43. In this case the values are not very much scattered. So, the mean is a good representative of the series A.

Although the mean of the series B have mean 40, the observations are widely scattered. In this case the mean does not satisfactorily represent the entire series in general. Thus we observed that only measures of central tendency cannot be representative of a distribution. We have to calculate the scatteredness of various observations of a distribution.

The scatteredness of data about an average is called dispersion.

Objectives of Measures of Variability: (2)

The objectives of measures of variability are:-

- ① To study the reliability of average
- ② To control variation
- ③ To make comparison among series
- ④ To make further statistical analysis.

Criteria of an ideal measures of dispersion

- ① A measure of variation should be based on all the observations of a series.
- ② It should be rigidly defined.
- ③ It should be simple to calculate and easy to understand.
- ④ It should not be extremely influenced by extreme values.
- ⑤ It should not be affected much by fluctuations of sampling.

Various measures of dispersion:

- ① Range
- ② Quartile deviation (Q.D)
- ③ Mean deviation (M.D)
- ④ Standard deviation (S.D)