Measures of Dispersion - (4)

Coefficient of Mean Deviation.

In order to find out coefficient of mean deviation, mean deviation of the series is divided by the central tendency of the series. If the deviations are taken from arithmetic mean, the mean deviation is divided by the arithmetic mean, and, if the deviations are taken from median, the ~~median~~ the mean deviation is divided by the median. Likewise, if the deviations are taken from mode of the series, the mean deviation is divided by mode value.

Thus.

(1) Coefficient of MD from mean

$$= \frac{MD_{\bar{x}}}{\bar{x}} = \frac{\text{Mean Deviation}}{\text{Arithmetic mean.}}$$

(2) Coefficient of MD from Median.

$$\frac{MD_M}{M} = \frac{\text{Mean Deviation}}{\text{Median.}}$$

(3) Coefficient of MD from mode.

$$= \frac{MD_Z}{Z} = \frac{\text{Mean Deviation}}{\text{Mode}}$$

Calculation of Mean Deviation.

following illustration should explain the calculation of mean deviation in case of individual series:

(1) Individual Series and Mean Deviation.

following illustration should explain the calculation of mean deviation in case of individual series.

Serial No	1	2	3	4	5	6	7	8	9
Wages (₹)	2	42	45	47	50	51	54	55	57

Sol^n.

Calculation of mean Deviation and coefficient of Mean Deviation using Median

S.No.	wage	Deviation from median. $M-(50)$
1	40	10
2	42	8
3	45	5
4	47	3
5	50 (M)	0
6	51	1
7	54	4
8	55	5
9	57	7
N=9		$\Sigma\|dm\| = 43$.

Calculation of mean Deviation and coefficient of mean Deviation using Arithmetic Mean.

S.No.	wage	$dx = (x - \bar{x})$ $\bar{x} = 49$
1	40	9
2	42	7
3	45	4
4	47	2
5	50	1
6	51	2
7	54	5
8	55	6
9	57	8
N=9	$\Sigma x = 441$	$\Sigma\|dx\| = 44$

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from Media

M :- Size of $\frac{N+1}{2}$ th items

M :- Size of $\frac{9+1}{2}$ th items.

M :- 5th items :- ₹ :- 50.

(b) $MDm = \frac{\Sigma d/m}{N} = \frac{43}{9} = ₹ 4.78.$

(c) Coefficient of MDm

$= \frac{MDm}{M} = \frac{4.78}{50} = 0.096.$

from Mean.

(a) $= \bar{x} = \frac{\Sigma x}{N} = \frac{441}{9} = ₹ 49.$

b :- $MD\bar{x} = \frac{\Sigma |dx|}{N} = \frac{44}{9} = 4.89.$

Coefficient of $MD\bar{x} = \frac{MD\bar{x}}{\bar{x}}$

$= \frac{4.89}{49} = 0.10$