Measures of Dispersion - (16)

Frequency Distribution Series and Mean Deviation.

Continuous series are first converted into discrete series by finding mid values of the class intervals. Afterwards, same procedure is followed for the calculation of mean Deviation and its coefficient as in the case of discrete series.

Illustration

Calculate mean deviation and its coefficient from the median of the following data:

Size	100-120	120-140	140-160	160-180	180-200
frequency	4	6	10	8	5

Sol^n

Size	Mid value m	frequency f	cf	dm = |m - M| M = (153)	f|dm|
100-120	110	4	4	110 - 153	172
120-140	130	6	10	130 - 153 = 23	138
140-160	150	10	20	150 - 153 = 3	30
160-180	170	8	28	170 - 153 = 17	136
180-200	190	5	33	190 - 153 = 37	185
		N = 33			

M = Size of $\frac{N}{2}$ th items

= Size of $\frac{33}{2}$ th items = 16.5th item.

140 - 160 - Median class

$f = 10$

$i = 20$

$cf = 10$

$l_1 = 140$.

$$M = l_1 + \frac{\frac{N}{2} - c.f}{f} \times i$$

$$= 140 + \frac{16.5 - 10}{10} \times 20$$

$$= 140 + 13 = 153$$

Mean Deviation from Median

$$MDm = \frac{\Sigma f|dm|}{\Sigma f} = \frac{661}{33} = 20.03$$

Coefficient of Mean Deviation

$$\frac{MDm}{M} = \frac{20.03}{153} = 0.1309$$

$MDm = 20.03$

Coefficient of $MDm = 0.1309$