

Measures of Dispersion

- In statistics, to describe the data set accurately, statisticians must know more than the measures of central tendency.
- An average is an attempt to summarize a set of data using just one number.
- An average taken by itself may not always be very meaningful. We need a statistical cross-reference that measures the spread of the data.

Defining Formulas (Sample Statistic)

$$\text{Sample variance} = s^2 = \frac{\sum(x - \bar{x})^2}{n - 1} \quad (1)$$

$$\text{Sample standard deviation} = s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}} \quad (2)$$

where x is a member of the data set, $\bar{x}$ is the mean, and n is the number of data values. The sum is taken over all data values.

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Column I x	Column II $x - \bar{x}$	Column III $(x - \bar{x})^2$
2	$2 - 6 = -4$	$(-4)^2 = 16$
3	$3 - 6 = -3$	$(-3)^2 = 9$
3	$3 - 6 = -3$	$(-3)^2 = 9$
8	$8 - 6 = 2$	$(2)^2 = 4$
10	$10 - 6 = 4$	$(4)^2 = 16$
10	$10 - 6 = 4$	$(4)^2 = 16$
$\Sigma x = 36$		$\Sigma(x - \bar{x})^2 = 70$



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Thank you

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