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\* Measures of Dispersion:

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Range = largest value - smallest value.

Standard deviation: How far away the average value is from the mean.

$$\sum (x_i - \mu) = 0$$

$$x_i - \mu < 0$$

$$x_i - \mu > 0$$

$$\sigma = \sqrt{\frac{\sum (x_i - \mu)^2}{N}}$$

= population standard deviation

$x_1, x_2, \dots, x_n$  are the  $N$  observations.

Sample standard deviation

$$S = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n - 1}}$$

The more spread out the data set is, the higher the standard deviation will be.

\* variance  $\sigma^2$