Statistics: Formula Sheet

Nick Maini

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Range

$$Range = Max(X) - Min(X)$$

Deviation

$$D_i = x_i - (\bar{x})$$

$$|D_i| = |x_i - (\bar{x})|$$

Arithmetic mean

Population mean:

$$\mu = \frac{1}{N}\sum_{i=1}^{N} X_i$$

Sample mean:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} X_i$$

Mean absolute deviation

Population mean absolute deviation

$$MAD_{\mu} = \frac{1}{N}\sum_{i=1}^{N}|x_i - \mu|^2$$

Sample mean absolute deviation

$$MAD_{\bar{x}} = \frac{1}{n}\sum_{i=1}^{n}|x_i - \bar{x}|^2$$

Standard deviation

Population standard deviation:

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

Sample standard deviation:

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

Variance

Population variance

$$\sigma^2 = \frac{\sum_{i=1}^{N}(x_i - \mu)^2}{N}$$

Sample variance

$$s^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}$$