Important Terminologies

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Average income of an Indian citizen?

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Population

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Important Terminologies

Average income of an Indian citizen?

Population

Sample

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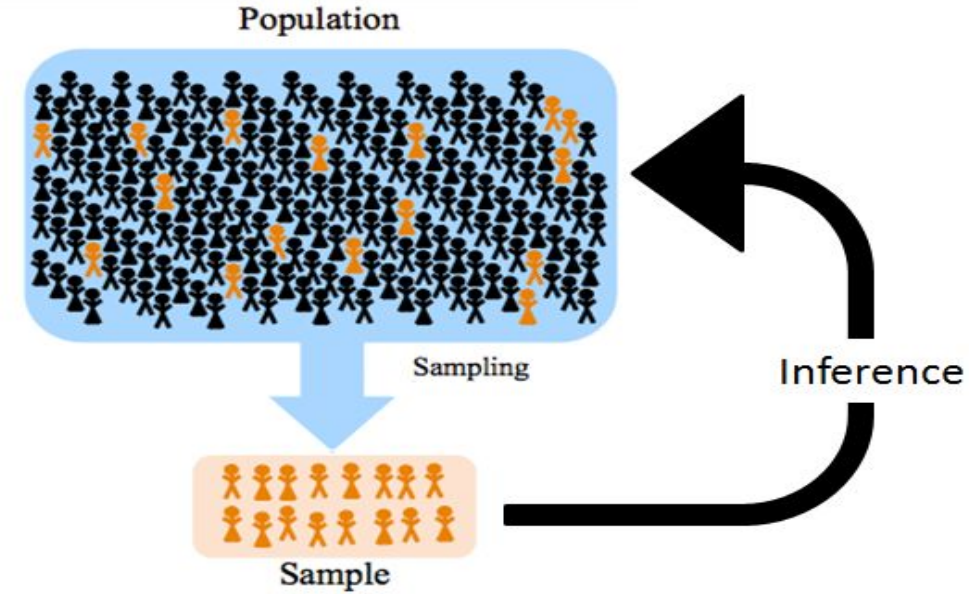
Important Terminologies

Average income of an Indian citizen?



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Population vs Sample

Population: Includes all the elements from a set of data

Sample: Subset of Population

Population vs Sample

Population: Includes all the elements from a set of data

Sample: Subset of Population

Measurable characteristics for Population is known as Parameters

Measurable characteristics for Sample is known as Statistics

Population vs Sample

Population Mean (μ) = $$\frac{\sum_{i=1}^{N} x_i}{N}$$

Sample Mean ($\bar{x}$) = $$\frac{\sum_{i=1}^{n} x_i}{n}$$

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Population vs Sample

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

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

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Why ?

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Smaller Value

Not a good Estimator

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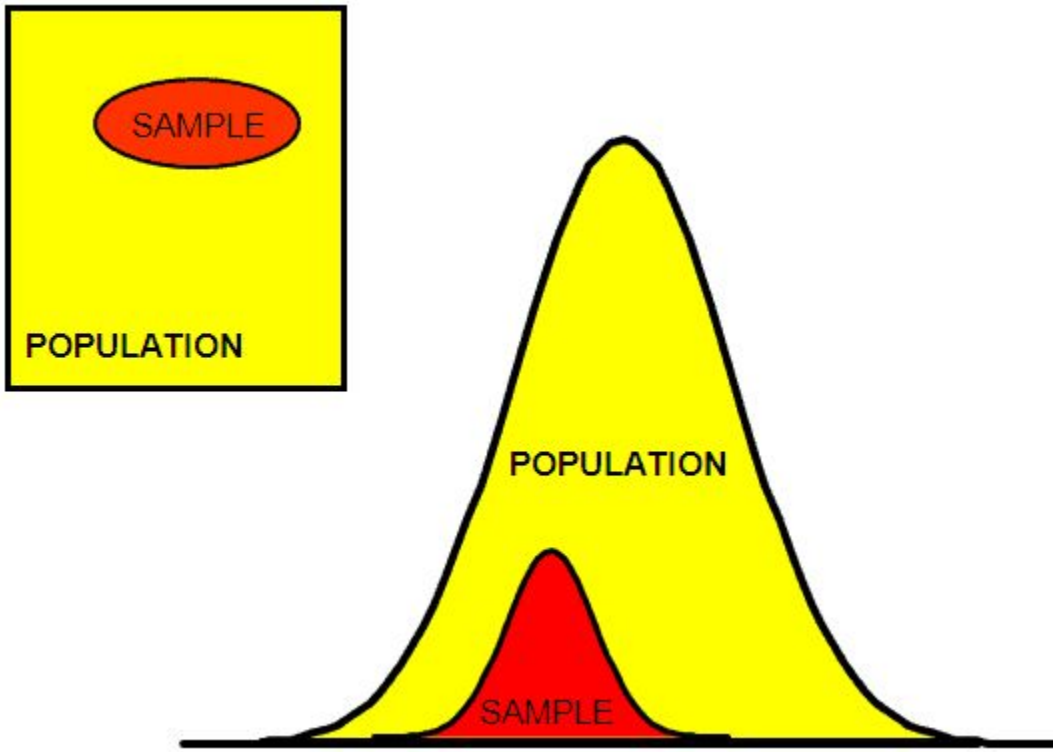
Population vs Sample



Smaller Value

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Population vs Sample

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

Compensate

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

a good estimator

bessel's correction

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Thank You!