Statistical Notations

X is a characteristic of a population from which a random sample of size n is drawn and $X_1, \ldots, X_n$ are the sample variables.

Function	Population (theoretical)	Sample
Mean	$\mu = E(X)$	$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i$
Variance	$\sigma^2 = V(X)$	$s^2 = \frac{1}{n-1}\sum_{i=1}^{n}(X_i - \overline{X})^2$
Standard deviation	$\sigma = \sqrt{V(X)}$	$s = \sqrt{s^2}$
Moment of order k	$\nu_k = E\left(X^k\right)$	$\overline{\nu}_k = \frac{1}{n}\sum_{i=1}^{n} X_i^k$
Central moment of order k	$\mu_k = E\left[(X - E(X))^k\right]$	$\overline{\mu}_k = \frac{1}{n}\sum_{i=1}^{n}(X_i - \overline{X})^k$
Proportion	$p = P(i \in A)$	$\overline{p} = \frac{\text{number of } X_i \text{ from } A}{n}$