

LinqStatistics API

The LinqStatistics API is a set of extension methods that are modelled after [Enumerable](#), with overloads to accept the same intrinsic numeric types as Sum and Average. The LinqStatistics.NaN namespace includes implementations that will return [NaN](#) instead of throwing exceptions when cases like divide by zero would happen.

Statistics Included

CountEach

[CountEach](#)

Covariance

[Covariance](#)

$$\text{cov}(X, Y) = \frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})(y_i - \bar{y})$$

Histogram

[Histogram](#)

Kurtosis

[Kurtosis](#)

$$K = \frac{N(N+1)(N-1) \sum_{i=1}^N (x_i - \bar{x})^4}{(N-2)(N-3) (\sum_{i=1}^N (x_i - \bar{x})^2)^2}$$

Least Squares Linear Regression

[Least Squares](#)

$$y = mx + b$$

$$b = \frac{N \sum xy - (\sum x)(\sum y)}{N(\sum x^2) - (\sum x)^2}$$

$$m = \bar{y} - b\bar{x}$$

Median

[Median](#)

MinMax

[MinMax](#)

Mode

[Mode](#)

Pearson

[Pearson](#)

$$\rho(x, y) = \frac{\text{cov}(x, y)}{\sigma_x \sigma_y}$$

Range

[Range](#)

Root Mean Square

[Root Mean Square](#)

$$rms = \sqrt{\frac{\sum_{i=1}^N x_i^2}{N}}$$

Skewness

[Skewness](#)

$$S = \frac{N\sqrt{N-1}}{N-2} \frac{\sum_{i=1}^N (x_i - \bar{x})^3}{(\sum_{i=1}^N (x_i - \bar{x})^2)^{3/2}}$$

Standard Deviation

[Sample](#)

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

[Population](#)

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

Variance

[Sample](#)

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

[Population](#)

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