Correlation Coefficient & Regression Formulas

Pearson's Correlation Coefficient

$$r = \frac{n\Sigma xy - \Sigma x \Sigma y}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

&

$$r = \frac{\Sigma(x - \bar{x})(y - \bar{y})}{\sqrt{\Sigma(x - \bar{x})^2(y - \bar{y})^2}}$$

Spearman Rank correlation coefficient

$$r = 1 - \frac{6\Sigma di^2}{n(n^2 - 1)}$$

$$di = R_x - R_y$$

R_x is Rank Of X While R_y is Rank of Y

Regression Formula

$$y = a + bx$$

$$b = \frac{n\Sigma xy - \Sigma x \Sigma y}{n\Sigma x^2 - (\Sigma x)^2}$$

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

I love σ^2

Standard Error of Mean

$$SEM = \frac{Stadard Deviation}{\sqrt{n}}$$

Standard Deviation Formulas

$$SD = \sqrt{\frac{\Sigma x - \frac{(\Sigma x)^2}{n}}{n - 1}}$$

&

$$SD = \sqrt{\frac{\Sigma(X - \bar{x})^2}{n - 1}}$$