

## Formulas for statistical inference in regression analysis

The standard deviation for a SAMPLE CORRELATION (when  $\rho=0$ ):

$$sd(r) = \sqrt{\frac{1 - r^2}{n - 2}}$$

The standard deviation for a SAMPLE SLOPE:

$$sd(\hat{\beta}_1) = \sqrt{\frac{s_e^2}{(n - 1) \cdot Var(X)}}$$

The standard deviation for a PREDICTED AVERAGE:

$$sd(\hat{\mu}_{Y|X}) = \sqrt{s_e^2 \cdot \left[ \frac{1}{n} + \frac{(X - \bar{X})^2}{(n - 1) \cdot Var(X)} \right]}$$

The standard deviation for a PREDICTED INDIVIDUAL:

$$sd(\hat{Y}) = \sqrt{s_e^2 \cdot \left[ 1 + \frac{1}{n} + \frac{(X - \bar{X})^2}{(n - 1) \cdot Var(X)} \right]}$$