

### Correlations

Bivariate descriptive statistics: Two variables

Univariate descriptive statistics: One variable

$\sum(x-\bar{x})^2 = \text{Minimum}$

Correlation: Measures the direction and degree of linear Relationship between two variables

Linear Relationship: When the relationship between two variables can be most accurately represented by a straight line

$Y = bX + a$

$a = Y$  intercept (i.e., value of  $Y$  when  $X = 0$ )

### Formulas

$Y = bX + a$  Equation of the line

Mean  $\bar{X}$   $\sum X/N$

Deviation score  $(X - \bar{X})$

Squared deviation score  $(X - \bar{X})^2$

Sums of squares (SS)  $\sum(X - \bar{X})^2$

Variance ( $SD^2$ )  $SS/N$

sample size  $N$

Standard deviation (SD)  $\sqrt{SD^2}$

Sum of products (SP)  $\sum(X - \bar{X})(Y - \bar{Y})$

Covariance ( $Cov$ )  $SP/N$



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