## Correlations

Bivariate descriptive statistics: Two variables
Univariate descriptive statistics: One variable
$\Sigma(x-\bar{x})^{2}=$ 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
$Y=b X+a$
$\mathrm{a}=\mathrm{Y}$ intercept (i.e., value of Y when $\mathrm{X}=0$ )

| Formulas |  |
| :--- | :--- |
| $\mathrm{Y}=\mathrm{bX}+\mathrm{a}$ | Equation of the line |
| Mean $\overline{\mathrm{X}}$ | $\Sigma \mathrm{X} / \mathrm{N}$ |
| Deviation score | $(\mathrm{X}-\overline{\mathrm{X}})$ |
| Squared deviation score | $(\mathrm{X}-\overline{\mathrm{X}})^{2}$ |
| Sums of squares (SS) | $\Sigma(\mathrm{X}-\overline{\mathrm{X}})^{2}$ |
| Variance $\left(\mathrm{SD}^{2}\right)$ | $\mathrm{SS} / \mathrm{N}$ |
| sample size | N |
| Standard deviation (SD) | $\sqrt{ } \mathrm{SD}^{2}$ |
| Sum of products (SP) | $\Sigma(\mathrm{X}-\overline{\mathrm{X}})(\mathrm{Y}-\overline{\mathrm{Y}})$ |
| Covariance $(\mathrm{Cov})$ | $\mathrm{SP} / \mathrm{N}$ |



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