

ML 4202 Chapter 17

Bivariate techniques: Statistical methods of analyzing the relationship between two variables.

- When two variables are involved, the techniques employed are known as *multivariate techniques*.

Independent Variable: Variable believed to affect the value of the dependent variable.

- Predictor

Dependent Variable: Variable expected to be explained or caused by the independent variable.

- Criterion

Bivariate Regression

Bivariate Regression Analysis: Analysis of the strength of the linear relationship between 2 variables when one is considered the independent variable and the other the dependent variable.

Nature of the Relationship

Scatter Diagram: Graphic plot of the data with dependent variable on the Y (vertical) axis and the independent variable on the X (horizontal) axis. Shows the nature of the relationship between the two variables, linear or nonlinear.

- General equation for the Least-Squares Estimation Procedure is $Y = a + Bx$

Coefficient of Determination: Percentage of the total variation in the independent variable explained by the independent variable.

Error sum of squares: Variation not explained by the regression

- We will reject the null hypothesis if the calculated F statistic is greater than or equal to the table, or critical, F value.

Correlation Analysis: Analysis of the degree to which changes in one variable are associated with changes in another.

Pearson's product-moment correlation: Correlation analysis technique for use with metric data.