Programming for Big Data

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April 27, 2021

Outline

- ▶ Correlation vs. Regression
- ▶ Simple Linear Regression Model
- ▶ Introduction to Regression Analysis
- ▶ Types of Relationships
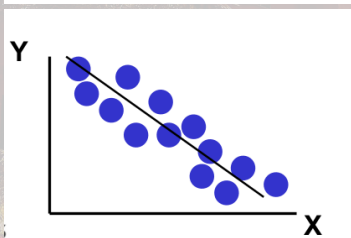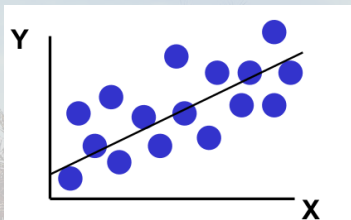- ▶ Regression Model

Correlation vs. Regression

▶ A scatter diagram can be used to show the relationship between two variables

▶ Correlation analysis is used to measure strength of the association (linear relationship) between two variables

▶ Correlation is only concerned with strength of the relationship.

Regression Analysis

► Regression analysis is used to:
  ► Predict the value of a dependent variable based on the value of at least one independent variable.
  ► Explain the impact of changes in an independent variable on the dependent variable

► **Dependent variable:** the variable we wish to predict or explain.

► **Independent variable:** the variable used to explain the dependent variable

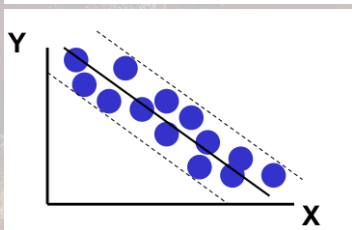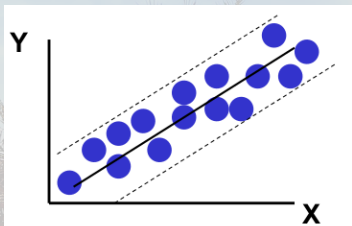# Types of Relationships
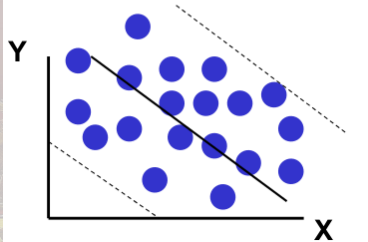
Linear Relationships
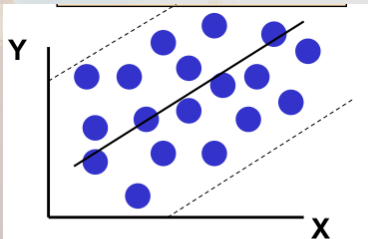

CurviLinear Relationships
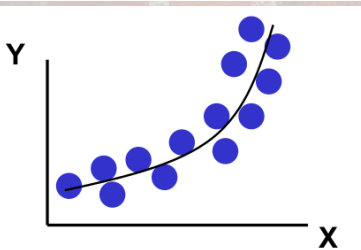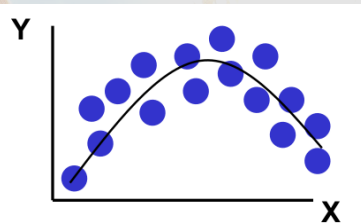
Types of Relationships

Strong Relationships

Weak Relationships

Regression Model

▶ Only **one independent variable**, **X**

▶ Relationship between X and Y is described by a linear function.

▶ Changes in Y are assumed to be caused by changes in X.

Figure: Simple Linear Regression Model

Simple Linear Regression Model

Figure:

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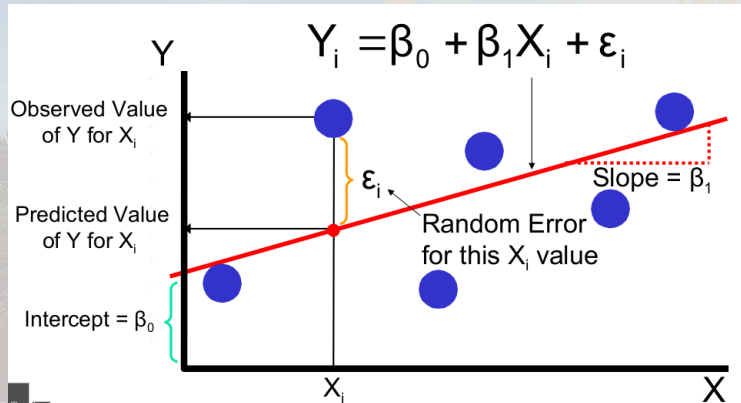
Python Code – Jupyter Notebook

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Thank You