

# Regression Analysis in Data mining



# Objectives

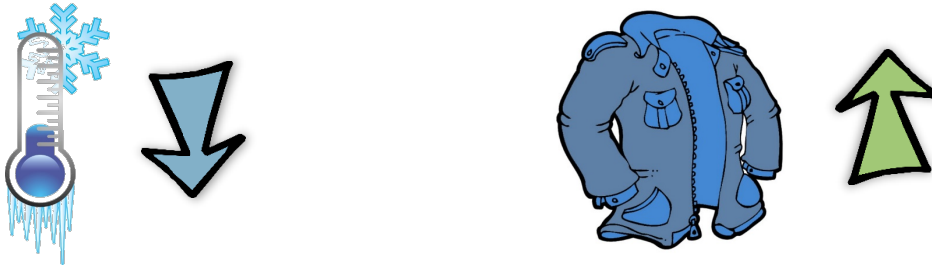


- ☐ What is Regression?
- ☐ Use case of Regression
- ☐ Types of Regression
- ☐ What is simple Linear Regression?
- ☐ What is Multiple Linear Regression?
- ☐ Understand regression
- ☐ Implement regression using Python
- ☐ Salary prediction using python
- ☐ Uber data analysis to predict the cab fare

# What is Regression?

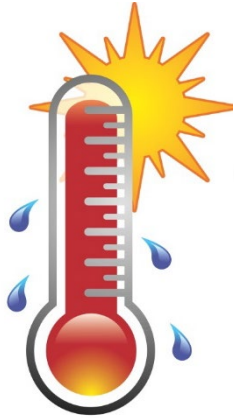
Regression is a technique that predicts the value of variable 'y' based on the values of variable 'x'.  
For example,

If you think there is a relationship between two things regression would help confirm it!



**Note:** As the temperature drops sale of jacket increases.

# Use case of Regression

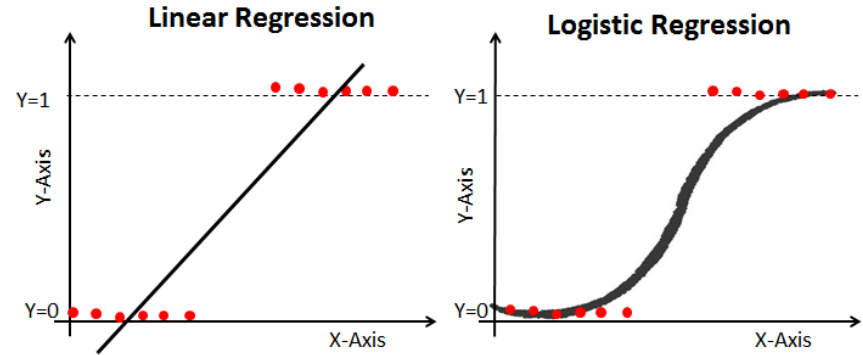


Note: As the temperature increases, number of cones sold at ice cream stores also increases.

# Types Of Regression

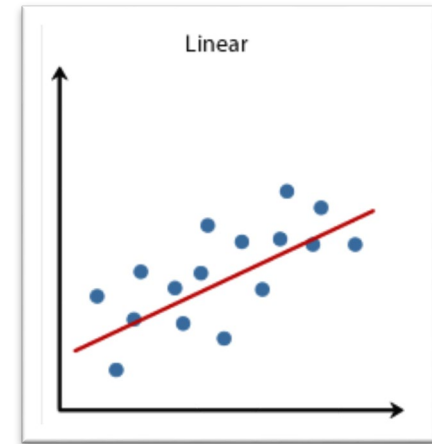
There are various types of Regression like:

- Linear Regression
- Logistic Regression etc.



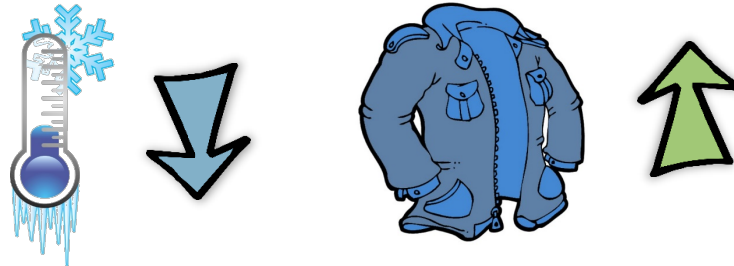
# What is Linear Regression?

- Linear regression is a type of supervised algorithm.
- Used for finding linear relationship between independent and dependent variable
- Finds relationship between two or more continuous variables



# What is Multiple Linear Regression?

Multiple regression is nothing but an extension of linear regression. It helps to find the relationship between more than two variables. As we know in simple linear relation has one predictor and one response variable, but in the case of multiple regression we have more than one predictor variable and one response variable.



# Types Of Linear Regression

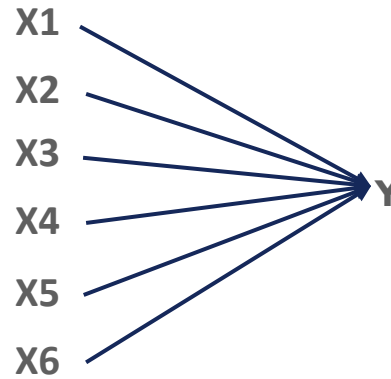
## SIMPLE LINEAR REGRESSION

Single Predictor



## MULTIPLE LINEAR REGRESSION

Multiple Predictor





# Types Of Linear Regression

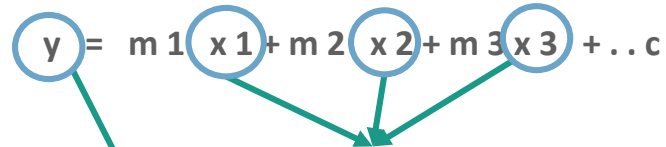
## SIMPLE LINEAR REGRESSION

Equation

$$y = mx + c$$

## MULTIPLE LINEAR REGRESSION

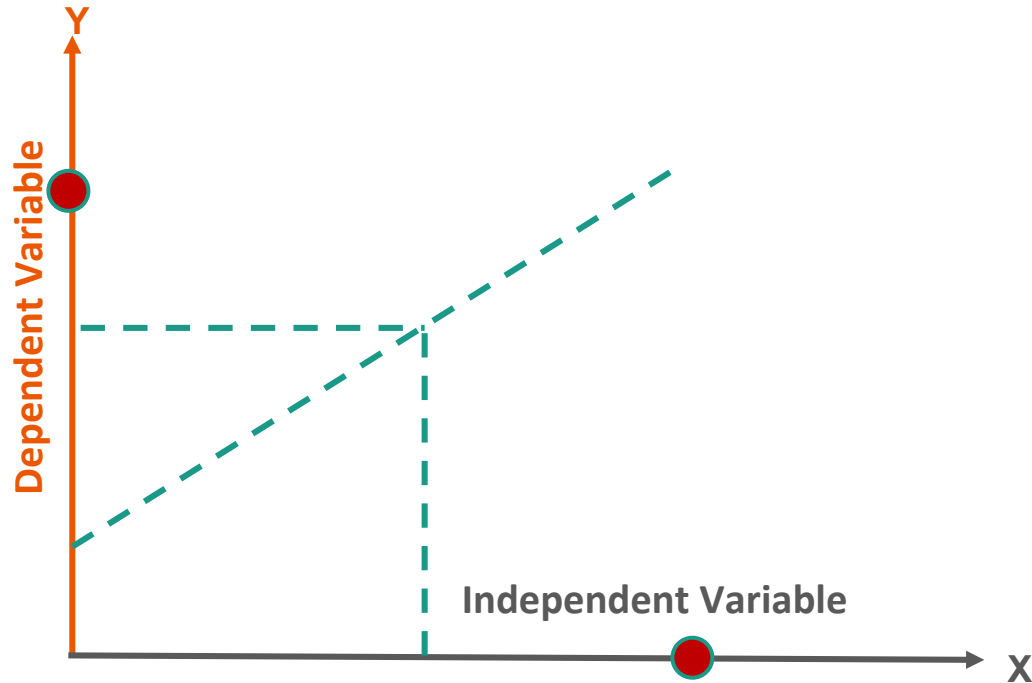
Equation

$$y = m_1 x_1 + m_2 x_2 + m_3 x_3 + \dots c$$


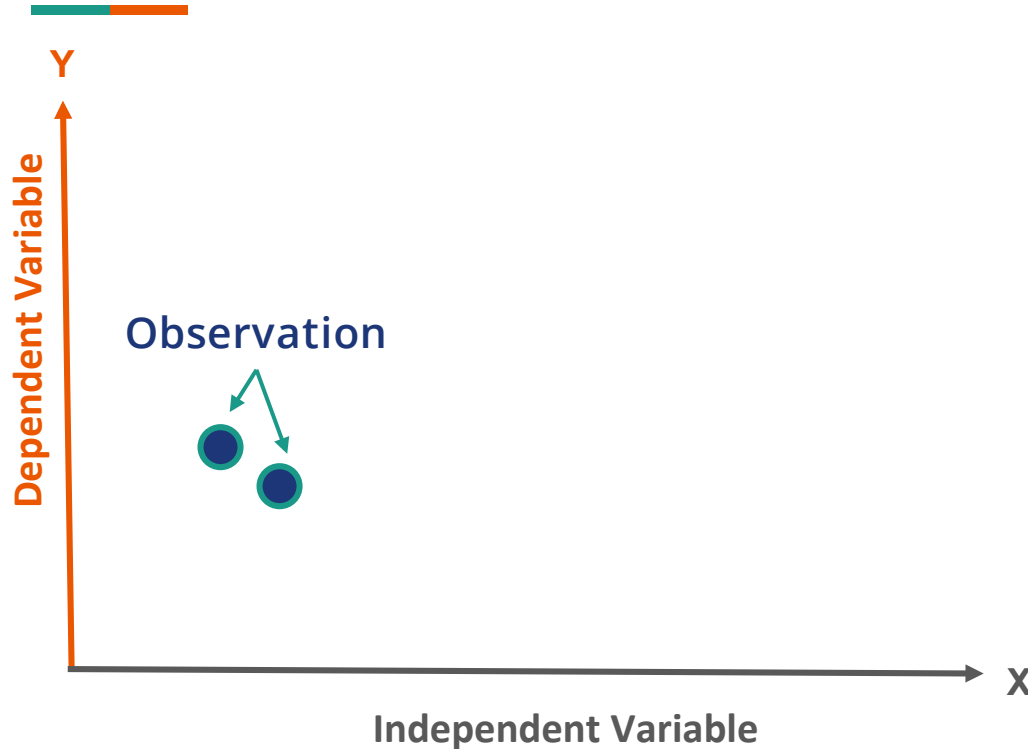
Independent Variables

Dependant Variable

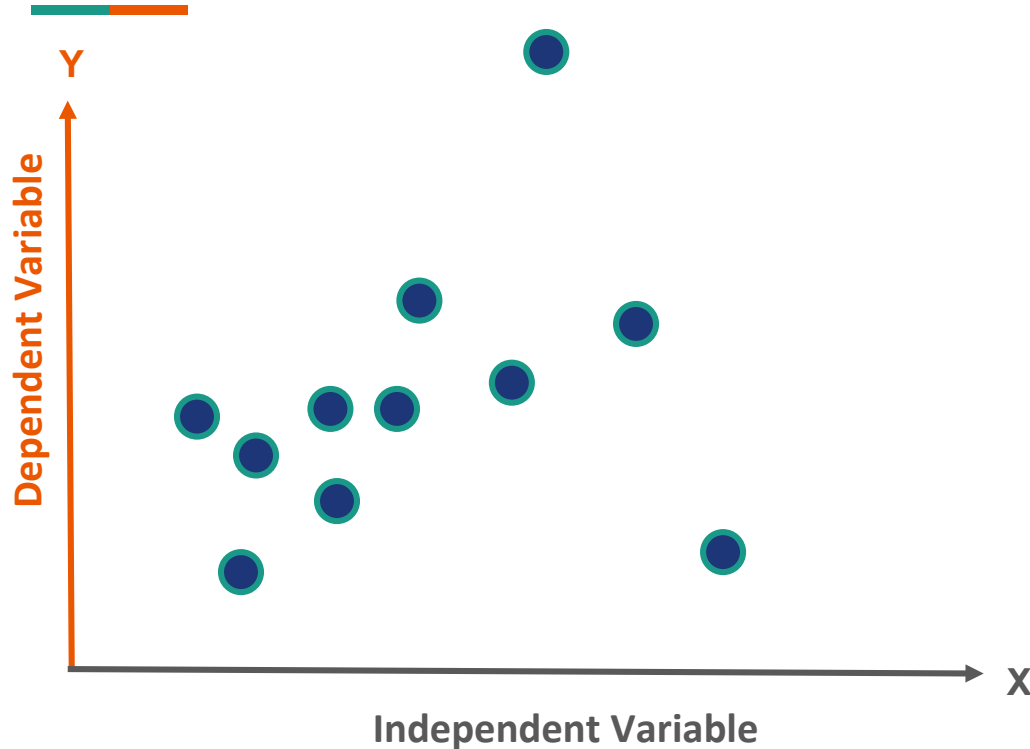
# Understand simple Linear Regression



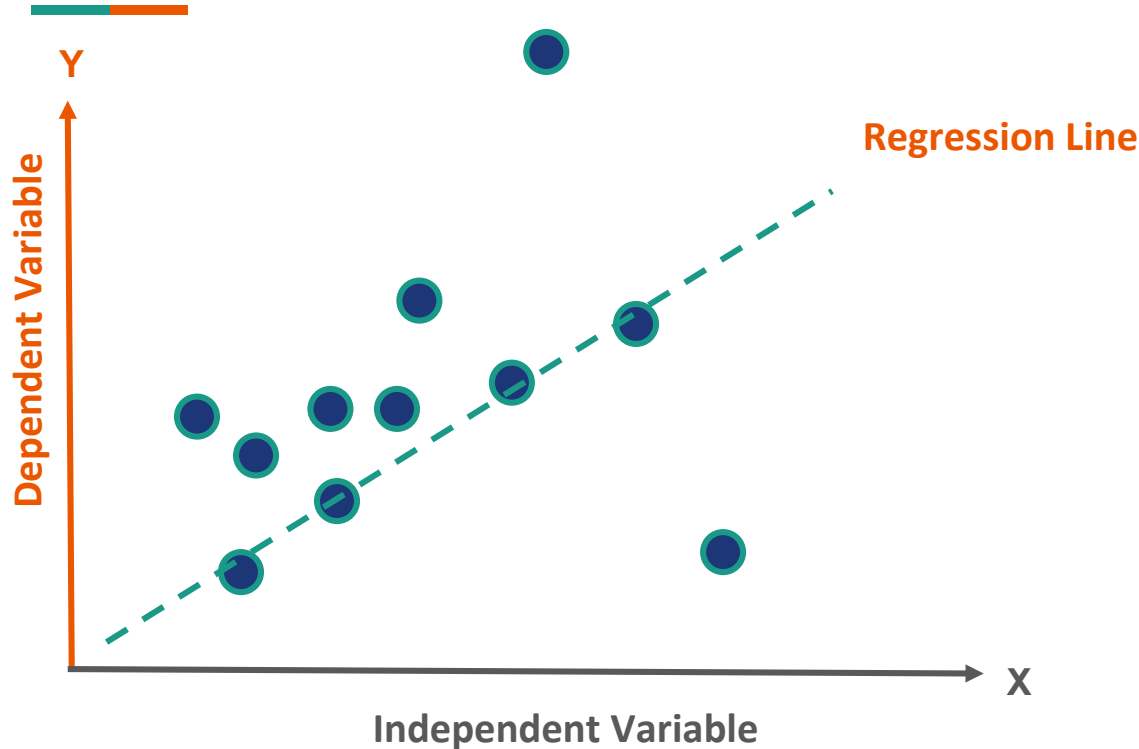
# Understand simple Linear Regression with observations



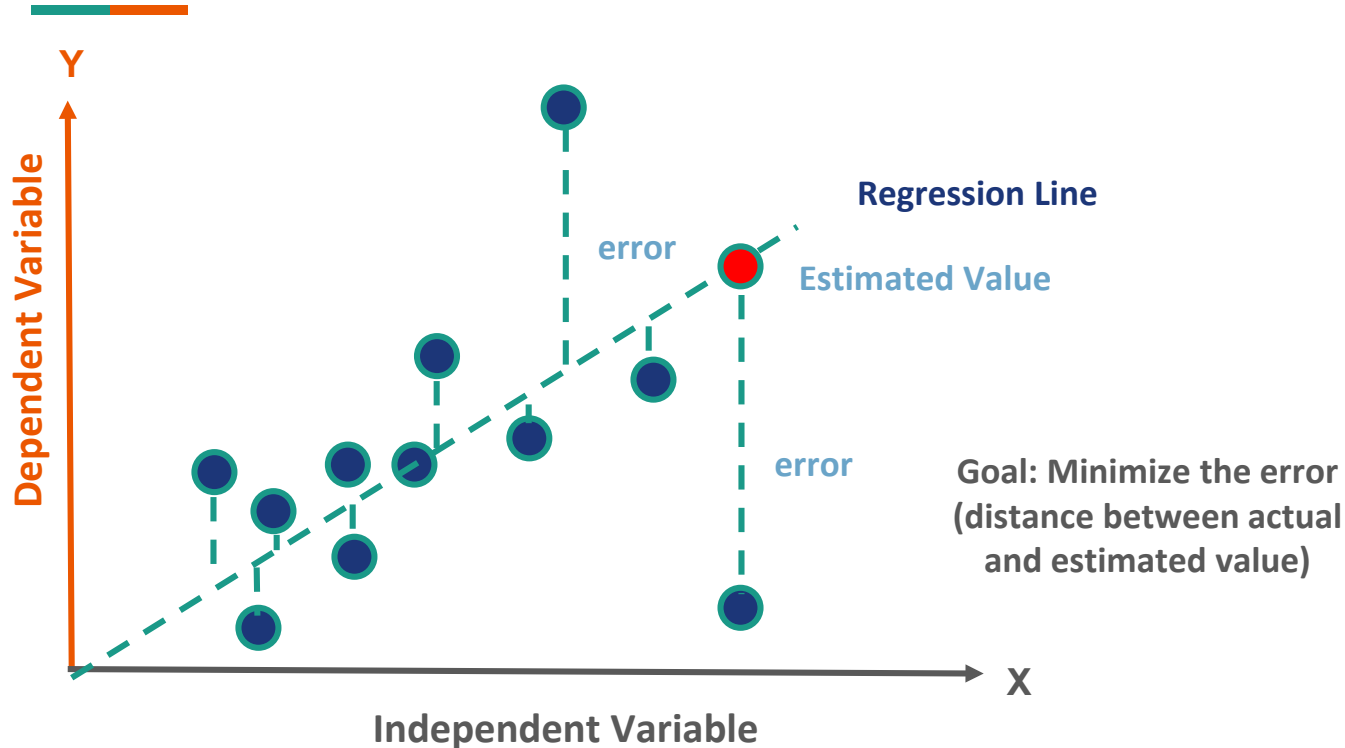
# Understand simple Linear Regression with observations



# Understand simple Linear Regression with observations



# Understand simple Linear Regression with observations



# Demo: Implement Linear regression using Python

# Demo: Salary prediction using Python



# Demo: Uber data analysis to predict the cab fare using Python

# Thank you