

A small circular icon representing a user profile. rishabh-mishra ▼

Course > Course 4: AI Statistics - Python > Module 2: Descriptive Statistics > Reading: Define and Demonstrate Linear Regression

## Reading: Define and Demonstrate Linear Regression

🔖 Bookmark this page

After learning this topic, you will be having knowledge about: Statistical Linear Regression.

### Statistical Linear Regression:

A statistical measure that attempts to determine the strengths of the relationship between one dependent variable (usually denoted by  $Y$ ) and a series of the other changing variable (Known as the independent variable).

- In other words: Regression is a mathematical technique used to estimate the cause and effect relationship among variables.

Diagram illustrating the components of the linear regression equation  $y = mx + b$ :

- Dependent Variable**:  $y$
- Indendent Variable**:  $x$
- Where line crosses the y-axis**:  $b$
- Y- Intercept**:  $b$
- Coefficient, Rate and Slope of line**:  $m$

### Application of Linear Regression:

Five application scenarios of linear regression:

- Which consumer is likely to default?** (Icon: Person in a suit)
- Which promotion is more effective?** (Icon: Megaphone)
- What is the risk associated with a consumer?** (Icon: Umbrella with the word **RISK** in a blue box)
- What percentage of loans is likely to result in a loss?** (Icon: Bar chart with a downward arrow and a dollar sign)
- How to identify the most profitable customer?** (Icon: Person in a car with a dollar sign)

### Types of Linear Regression:

### Example of Linear Regression

In this example, medical insurance data has been used to calculate the RMSE value.

**RMSE:** Root Mean Square Error (RMSE) is the standard deviation of the residuals (prediction errors).

Residuals are a measure of how far from the regression line data points are; RMSE is a measure of how to spread out these residuals are. In other words, it tells you how concentrated the data is around the line of best fit.

Click on the links below to learn how to use linear regression.

Download the data set:

[https://gitlab.com/Pallavi\\_rai/python-labs/-/raw/master/insurance.csv](https://gitlab.com/Pallavi_rai/python-labs/-/raw/master/insurance.csv)

Download the Jupyter notebook:

[https://gitlab.com/Pallavi\\_rai/python-labs/-/blob/master/project-medical\\_insurance\\_linear\\_reg.ipynb](https://gitlab.com/Pallavi_rai/python-labs/-/blob/master/project-medical_insurance_linear_reg.ipynb)

---



In today's modern age of disruption, SkillUp Online is your ideal learning platform that enables you to upskill to the most in-demand technology skills like Data Science, Big Data, Artificial Intelligence, Cloud, Front-End Development, DevOps & many more. In your journey of evolution as a technologist, SkillUp Online helps you work smarter, get to your career goals faster and create an exciting technology led future.

## Corporate

- ▶ [Home](#)
- ▶ [About Us](#)
- ▶ [Enterprise](#)
- ▶ [Blog](#)
- ▶ [Press](#)

## Support

- ▶ [Contact us](#)
- ▶ [Terms of Service](#)
- ▶ [Privacy Policy](#)

Copyright ©2020 [Skillup](#). All Rights Reserved