



# Linear Regression

Statistics made easy

Statistical data  
analysis – online  
and simple!



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## Simple linear regression

Does the **weekly working time** have an influence on the **hourly salary** of employees?

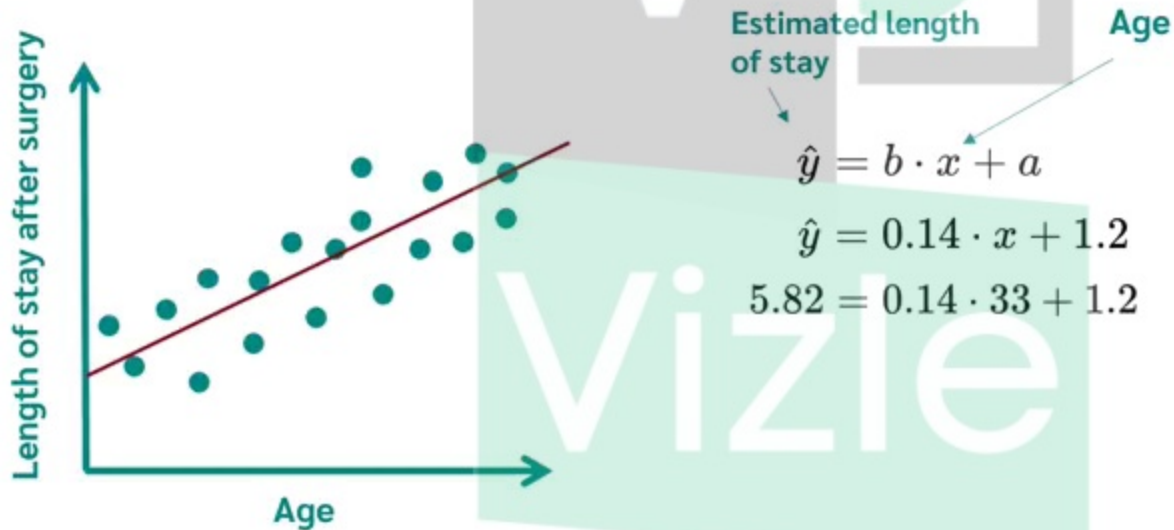


## Multiple linear regression

Do the **weekly working hours** and the **age** of employees have an influence on their **hourly salary**?



## Simple Linear Regression



## Multiple Regression

Simple linear  
Regression

$$\hat{y} = b \cdot x + a$$



Multiple linear  
Regression

$$\hat{y} = b_1 \cdot x_1 + b_2 \cdot x_2 + \dots + b_k \cdot x_k + a$$

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## Model Summary

$$\hat{y} = b_1 \cdot x_1 + b_2 \cdot x_2 + \dots + b_k \cdot x_k + a$$

### Multiple correlation coefficient R

Measures the relationship/correlation between the dependent variable and the independent variables.

### Explained variance R<sup>2</sup>

Indicates how much of the variance of the dependent variable can be explained by the independent variables

Model summary

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R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard error of the estimate
0.7	0.49	0.299	551.608

### Adjusted R<sup>2</sup>

R<sup>2</sup> overestimates the coefficient of determination just when many independent variables are used

### Standard estimation error

Indicates by how much the model overestimates the dependent variable on average.



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