

# Correlation vs. Regression Made Easy: Which to Use + Why

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<https://learn.g2.com/correlation-vs-regression>

Correlation and regression are **statistical analyses** used to find connections between two variables, measure their connections, and make predictions. Measuring correlation and regression is commonly used in a variety of industries, and it can also be seen in our daily lives.

For instance, have you ever seen someone driving an expensive car and automatically thought that the driver must be financially successful? Or how about thinking that the farther you run on your morning workout, the more weight you'll lose?

Both of these are examples of real-life correlation and regression, as you're seeing one variable (a fancy car or a long workout) and then seeing if there is any direct relation to another variable (being wealthy or losing weight). As we investigate the relationships between two variables, it's important to know the differences and the similarities between correlation and regression.

## Correlation vs. regression

It's not uncommon for correlation and regression to be confused for one another as correlation can lead into regression. However, there are two key differences.

NOTE: This document has been modified.

# What are the key differences between correlation and regression?

First, one key difference between these two statistical analyses is that correlation measures the degree of a relationship between two variables ( $x$  and  $y$ ), whereas regression estimates how one variable affects another.

Therefore, use **correlation** to assess the direction (positive or negative) and the strength of the relationship between two variables ( $x$  and  $y$ ). Use **regression** to predict, optimize, or explain how one variable ( $x$ ) influences another variable ( $y$ ).

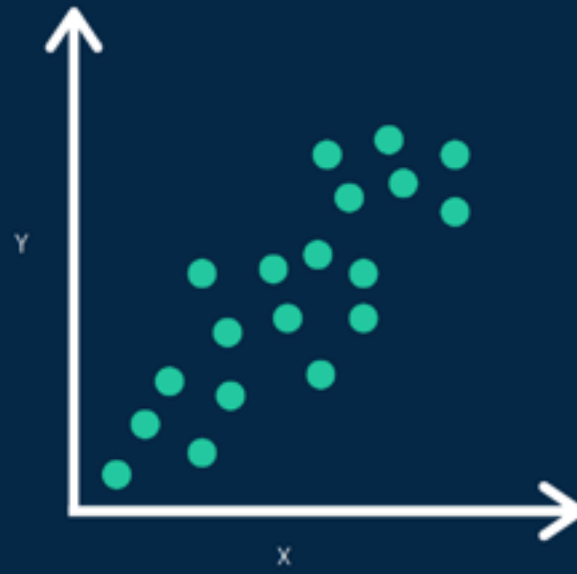
Second, because regression is used to predict, optimize, or explain how one variable ( $x$ ) influences another variable ( $y$ ),  $x$  and  $y$  play specific roles in regression.

$x$  is considered the independent or predictor variable;  $y$  is considered the dependent or criterion variable. The goal of regression is to use  $x$  to predict  $y$ . In contrast, in correlation,  $x$  and  $y$  are usually interchangeable.

	<b>Correlation</b>	<b>Regression</b>
When to use?	To quantify the relationship between two variables	To predict one variable, based on the other variable
Able to signify direction of relationship (positive OR negative)?	Yes	Yes
Able to quantify strength of relationship?	Yes	Yes
X and Y are interchangeable?	Yes	No
Used for prediction?	No	Yes



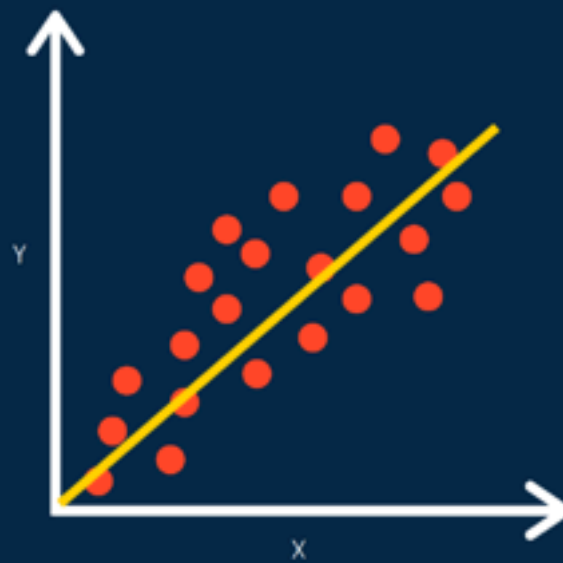
## Correlation Graph



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## Regression Graph



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