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## Correlational Study

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A correlational study determines whether or not two variables are correlated. This means to study whether an increase or decrease in one variable corresponds to an increase or decrease in the other variable.

It is very important to note that correlation doesn't imply causation. We'll come back to this later.

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## Types

There are three types of correlations that are identified:

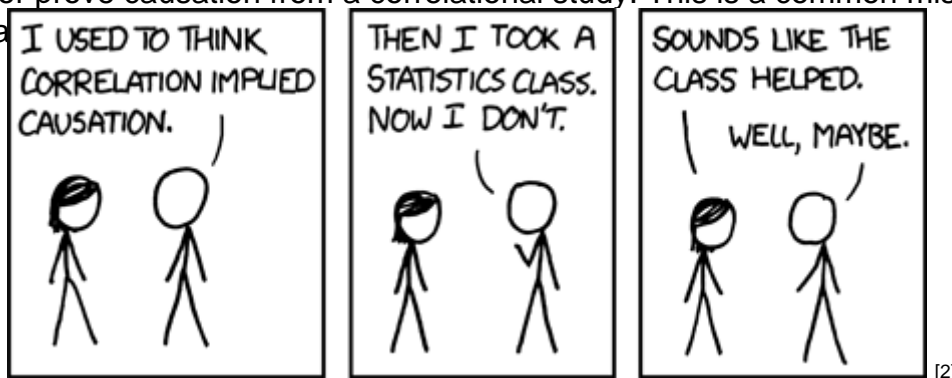
1. **Positive correlation:** Positive correlation between two variables is when an increase in one variable leads to an increase in the other and a decrease in one leads to a decrease in the other. For example, the amount of money that a person possesses might correlate positively with the number of cars he owns.
2. **Negative correlation:** Negative correlation is when an increase in one variable leads to a decrease in another and vice versa. For example, the level of education might correlate negatively with crime. This means if by some way the education level is improved in a country, it can lead to lower crime. Note that this doesn't mean that a lack of education causes crime. It could be, for example, that both lack of education and crime have a common reason: poverty.

3. No correlation: Two variables are uncorrelated when a change in one doesn't lead to a change in the other and vice versa. For example, among millionaires, happiness is found to be uncorrelated to money. This means an increase in money doesn't lead to happiness.

A correlation coefficient is usually used during a correlational study [1]. It varies between +1 and -1. A value close to +1 indicates a strong positive correlation while a value close to -1 indicates strong negative correlation. A value near zero shows that the variables are uncorrelated.

## Limitations

It is very important to remember that correlation doesn't imply causation and there is no way to determine or prove causation from a correlational study. This is a common mistake made by people in a



For example, a US politician speaking out against free lunches to poor kids at school argues - "You show me the school that has the highest free and reduced lunch, and I'll show you the worst test scores, folks" (nymag.com [3]). This is a correlation he is speaking about - one cannot imply causation. The obvious explanation for this is a common cause of poverty: people who are too poor to feed their children will not have the best test scores.

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**Source URL:** <https://explorable.com/correlational-study>

### Links

[1] <http://psychology.about.com/od/researchmethods/a/correlational.htm>

[2] <http://xkcd.com/552/>

[3] [http://nymag.com/daily/intelligencer/2010/01/south\\_carolinas\\_lt\\_governor\\_co](http://nymag.com/daily/intelligencer/2010/01/south_carolinas_lt_governor_co)