

What are the different study types used in statistics?

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The field of statistics utilizes various study types to analyze and interpret data. These study types can be broadly categorized into two main groups: observational studies and experimental studies. Observational studies involve collecting and analyzing data without any interference or manipulation of variables by the researcher. On the other hand, experimental studies involve deliberately manipulating one or more variables to measure their impact on the outcome. Within these two main groups, there are various subtypes, such as cross-sectional studies, longitudinal studies, case-control studies, and randomized controlled trials. Each study type has its advantages and limitations, and the appropriate choice depends on the research question and available resources. Understanding the different study types is crucial in designing and conducting statistically sound research studies.

Statistics - Study Types

A statistical study can be a part of the process of gathering data.

There are different types of studies. Some are better than others, but they might be harder to do.

Main Types of Statistical Studies

The main types of statistical studies are **observational** and **experimental** studies.

We are often interested in knowing if something is the **cause** of another thing.

Experimental studies are generally better than observational studies for investigating this, but usually require more effort.

An observational study is when observe and gather data without changing anything.

Experimental Studies

In an experimental study, the **circumstances** around the sample is changed. Usually, we compare two groups from a population and these two groups are treated **differently**.

One example can be a medical study to see if a new medicine is effective.

One group receives the medicine and the other does not. These are the different circumstances around those samples.

We can compare the health of both groups afterwards and see if the results are different.

Experimental studies can allow us to investigate causal relationships. A well designed experimental study can be useful since it can **isolate** the relationship we are interested in from

other effects. Then we can be more confident that we are measuring the true effect.

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