Quasi-Experimental Design | Definition, Types & Examples

- **Quasi-experimental design** aims to establish a cause-and-effect relationship between an independent and dependent variable.
- However, unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria.
- Quasi-experimental design is a useful tool in situations where true experiments cannot be used for ethical or practical reasons.

Differences between quasi-experiments and true experiments

There are several common differences between true and quasi-experimental designs.

	True experimental design	**Quasi-experimental design**
Assignment to treatment	The researcher **randomly assigns** subjects to control and treatment groups.	Some other, **non-random** method is used to assign subjects to groups.

	True experimental design	**Quasi-experimental design**
Control over treatment	The researcher usually **designs the treatment**.	The researcher often **does not have control over the treatment**, but instead studies pre-existing groups that received different treatments after the fact.
Use of control groups	Requires the use of **control and treatment groups**.	Control groups are not required (although they are commonly used).

Example of a true experiment vs a quasi-experiment

Let's say you are interested in the impact of a new psychological therapy on patients with depression.Example: True experimental designTo run a true experiment, you randomly assign half the patients in a mental health clinic to receive the new treatment. The other half—the control group—receives the standard course of treatment for depression.

Every few months, patients fill out a sheet describing their symptoms to see if the new treatment produces significantly better (or worse) effects than the standard one.

However, for ethical reasons, the directors of the mental health clinic may not give you permission to randomly assign their patients to treatments. In this case, you cannot run a true experiment.

Instead, you can use a quasi-experimental design.

Example: Quasi-experimental designYou discover that a few of the psychotherapists in the clinic have decided to try out the new therapy, while others who treat similar patients have chosen to stick with the normal protocol.

You can use these pre-existing groups to study the symptom progression of the patients treated with the new therapy versus those receiving the standard course of treatment.

Although the groups were not randomly assigned, if you properly account for any systematic differences between them, you can be reasonably confident any differences must arise from the treatment and not other confounding variables.

Types of quasi-experimental designs

Many types of quasi-experimental designs exist. Here we explain three of the most common types: nonequivalent groups design, regression discontinuity, and natural experiments.

1. Nonequivalent groups design

In nonequivalent group design, the researcher chooses existing groups that appear similar, but where only one of the groups experiences the treatment.

In a true experiment with random assignment, the control and treatment groups are considered equivalent in every way other than the treatment. But

in a quasi-experiment where the groups are not random, they may differ in other ways—they are nonequivalent groups.

- ☐ This is the most common type of quasi-experimental design.

Example: Nonequivalent groups design: You hypothesize that a new after-school program will lead to higher grades. You choose two similar groups of children who attend different schools, one of which implements the new program while the other does not.

By comparing the children who attend the program with those who do not, you can find out whether it has an impact on grades.

2. Regression discontinuity

Many potential treatments that researchers wish to study are designed around an essentially arbitrary cutoff, where those above the threshold receive the treatment and those below it do not.

Near this threshold, the differences between the two groups are often so minimal as to be nearly nonexistent. Therefore, researchers can use individuals just below the threshold as a control group and those just above as a treatment group.

Example: Regression discontinuitySome high schools in the Iraq are set aside for high-achieving students, who must exceed a certain score on a test to be allowed to attend. Those who pass this test most likely differ systematically from those who do not.

However, since the exact cutoff score is arbitrary, the students near the threshold—those who just barely pass the exam and those who fail by a very small margin—tend to be very similar, with the small differences in their scores mostly due to random chance. You can therefore conclude that any outcome differences must come from the school they attended.

To test the impact of attending a selective school, you can study the long-term outcomes of these two groups of students (those who barely passed and those who barely failed).