

1.1: Origin of the data

He who would catch fish must find the water first, they say. If you want to analyze data, you need to obtain them. There are many ways of obtaining data but the most important are **observation** and **experiment**.

Observation is the method when observer has the least possible influence on the observed. It is important to understand that zero influence is practically impossible because the observer will always change the environment.

Experiment approaches the nature the other way. In the experiment, influence(s) are strictly controlled. Very important here are precise measurements of effects, removal of all interacting factors and (related) contrasting design. The latter means that one experimental group has no sense, there must be at least two, experiment (influence) and control (no influence). Only then we can equalize all possibly interacting factors and take into account solely the results of our influence. Again, no interaction is practically impossible since everything around us is structurally too complicated. One of the most complicated things are we humans, and this is why several special research methods like blind (when patients do not know what they receive, drug or placebo) or even double blind (when doctor also does not know that) were invented.

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