

Null hypothesis

The word 'null' can be thought of as 'no change'. A null hypothesis is typically the standard assumption and is defined as the prediction that there is no interaction between variables.

For example, the null hypothesis states that there is no causal relationship between a new treatment and a reduction in disease symptoms. In other words, this means that a new treatment does not offer an improvement over the standard of care treatment – and that any observations of improvement are the result of chance.

Such a statement can be tested by a scientific study such as a clinical trial and the application of appropriate statistical tests. If a clinical trial finds that in fact there is a relationship, and the new treatment causes an improvement, the null hypothesis is *disproved* and can be rejected. In this case the alternative or research hypothesis can be adopted – in this example, this means that the new treatment is better than the standard of care treatment.