

## Types of Error in Statistics

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Type 1 error. A false positive. Erroneous rejection of the null hypothesis.

The probability of making a type 1 error is called alpha. Known as the 'significance level' when set for an experiment and represents how likely it is that at true null hypothesis will be rejected. Often set to 5%.

Type 2 error. A false negative. Acceptance of the null hypothesis in error.

The probability of a type 2 error is called beta. There is in general an inverse relationship between alpha and beta but several factors intervene.

The 'power' of a test for research purposes is  $1 - \beta$ , i.e. power is high when a false negative is unlikely. Power can be derived in terms of alpha, effect size, sample size and measurement precision.

Ref. Neyman and Pearson (1928). On the use and interpretation of certain test criteria for purposes of statistical inference.