

Confidence interval

in statistics refers to the probability that a population parameter will fall between a set of values for a certain proportion of times.

Example 1: Biology

Confidence intervals are often used in biology to estimate the mean height, weight, width, diameter, etc. of different plant and animal species.

For example, a biologist may be interested in measuring the mean weight of a certain species of frog in Australia. Since it would take too long to go around and weigh thousands of individual frogs, the biologist may instead collect a [simple random sample](#) of 50 frogs and measure the mean and standard deviation of the frogs in the sample.

She could then use the sample mean and sample standard deviation to construct an interval for the true mean of the frogs in the entire population.

Example 2: Clinical Trials

Confidence intervals are often used in clinical trials to determine the mean change in blood pressure, heart rate, cholesterol, etc. produced by some new drug or treatment.

For example, a doctor may believe that a new drug is able to reduce blood pressure in patients. To test this, he may recruit 20 patients to participate in a trial in which they used the new drug for one month. At the end of the month, the doctor may record the mean decrease in blood pressure and the standard deviation of the decrease in each patient in the sample.

He could then use the sample mean and sample standard deviation to construct an interval for the true mean change in blood pressure that patients are likely to experience in the population.

Example 3: Advertising

Confidence intervals are often used by marketing departments within companies to determine if some new advertising technique, method, tactic, etc. produces significantly higher revenue.