

WHAT IS THE CONFIDENCE INTERVAL OF AN ESTIMATE?*

Petrina Mangala

This work is produced by The Connexions Project and licensed under the Creative Commons Attribution License †

1 What is the confidence interval of an estimate?

The confidence interval of an estimate is the range where the true value is most likely to be. It is NOT the variability of the true value or of any other value between the confidence limits¹. It merely gives an estimated range of values that is likely to include the true value. Confidence intervals are calculated so that a certain percentage of the intervals include the unknown value. This percentage is known as the confidence level and is usually at 95%, but percentages of 90%, 99%, 99.9% may also be used to calculate the confidence interval for the unknown value. The confidence level is the probability value associated with a confidence interval, which is often expressed as a percentage.

Example:

Suppose you use a variance of 4 for a sample population with a confidence level of 95%. If you ask a question and 47% percent of your sample picks an answer, you can be certain that if you had asked the question of the entire relevant population, between 43% (47-4) and 51% (47+4) would have picked that answer. Therefore, the confidence interval in this case is the range between 43% and 51%.

Exercise:

An opinion poll predicted that, if the election were held today, the Conservative party would win 60% plus or minus 3% of the vote. The Poll master attached a 95% confidence level to this opinion. What is the confidence interval for the Conservative party? Answer²

References:

V. Easton, J. Macoll, Statistics glossary: Confidence intervals, http://www.cas.lancs.ac.uk/glossary_v1.1/confint.html#confint, last accessed 22 February 2006. Sample size terminology, The survey system, <http://www.surveysystem.com/sscalc.htm#terminology>, last accessed 22 February 2006

Further reading:

Will G. Hopkins, Generalising to a population: Confidence limits, <http://www.sportsci.org/resource/stats/generalize.html>
Co-Author: Christopher Chikalimba Gama

*Version 1.1: Mar 5, 2006 7:59 pm US/Central

†<http://creativecommons.org/licenses/by/2.0/>

¹http://cnx.org/GroupWorkspaces/wg412/module.2006-03-02.1394641665/module_view

²http://cnx.org/GroupWorkspaces/wg412/module.2006-03-02.8143723337/module_view

³http://www.cas.lancs.ac.uk/glossary_v1.1/confint.html#confinterval

⁴<http://www.surveysystem.com/sscalc.htm#terminology>

⁵<http://www.sportsci.org/resource/stats/generalize.html>