

How to Interpret the Margin of Error in Statistics

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You've probably heard or seen results like this: "This statistical survey had a margin of error of plus or minus 3 percentage points." What does this mean? Most surveys are based on information collected from a sample of individuals, not the entire population (as a census would be). A certain amount of error is bound to occur — not in the sense of calculation error (although there may be some of that, too) but in the sense of *sampling error*, which is the error that occurs simply because the researchers aren't asking everyone. The *margin of error* is supposed to measure the maximum amount by which the sample results are expected to differ from those of the actual population. Because the results of most survey questions can be reported in terms of percentages, the margin of error most often appears as a percentage, as well.

How do you interpret a margin of error? Suppose you know that 51% of people sampled say that they plan to vote for Ms. Calculation in the upcoming election. Now, projecting these results to the whole voting population, you would have to add and subtract the margin of error and give a range of possible results in order to have sufficient confidence that you're bridging the gap between your sample and the population. Supposing a margin of error of plus or minus 3 percentage points, you would be pretty confident that between 48% ($= 51\% - 3\%$) and 54% ($= 51\% + 3\%$) of the population will vote for Ms. Calculation in the election, based on the sample results. In this case, Ms. Calculation may get slightly more or slightly less than the majority of votes and could either win or lose the election.