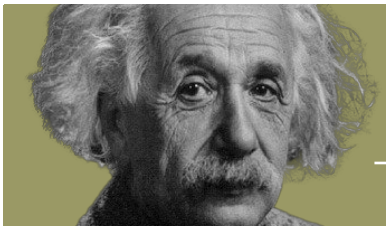

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Research like a Genius

Margins of Error

What are margins of error?

Margins of Error are ranges of uncertainty for the results of studies and surveys.

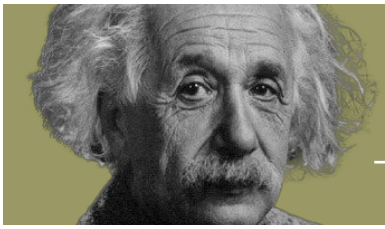
Why are margins of error important?

The apparent results of a study can lead you to make ill-informed decisions if you aren't aware of the study's margins of error.

What are the four layers of the margins of error cake?

1. The point estimate, which is the nominal or best estimate.
2. The outer bounds, which commonly account for the margin of sampling error but no other sources of uncertainty.
3. The confidence interval percentage, or the probability that the outer bounds are correct.
4. Non-sampling error, a broad range of potential errors that are rarely quantified and often overlooked.

4.70; 95% CI, 1.77–12.52



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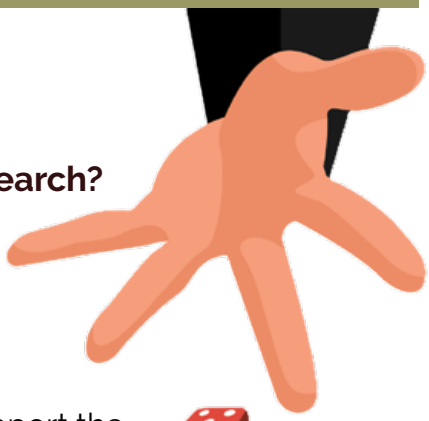
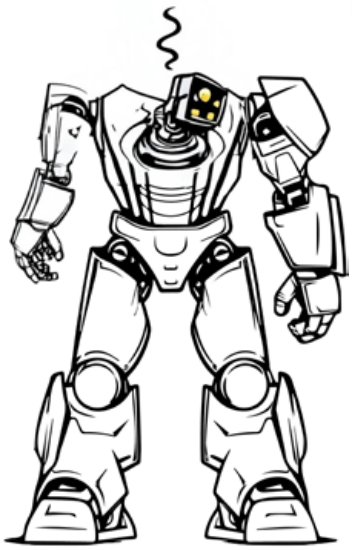


How can you assess margins of error when conducting research?

- If you hear someone summarize a study with a single figure, dig deeper.
- Don't assume that the authors of the primary sources will report the vital margins of error near the top of their studies.

- Be aware that there are often other layers of uncertainty that aren't reflected in sampling errors.



- If a study measures multiple types of outcomes, check to see if it accounts for multiple inference, or the fact that each attempt to measure a separate outcome increases the likelihood of getting a seemingly solid result due to pure chance.
- Don't mistake statistical significance for real-world importance.
- Don't assume that a statistically insignificant result means there's no difference or no effect.

- Don't fall into the trap of believing that a study is reliable just because the results are statistically significant.

REMEMBER: The "margins of error" reported by journalists and scholars rarely account for many other sources of error.