Stats Engine: How Optimizely calculates results

Skip Ahead

How Stats Engine works
Statistical concepts and techniques
Further reading

THIS ARTICLE WILL HELP YOU:

- Understand Optimizely's Stats Engine, its calculations, and how it affects your results
- **Distinguish** between our Stats Engine and other methodologies

When you run experiments, Optimizely determines the statistical likelihood of each variation actually leading to more conversions on your goals. Why does this matter? Because when you look at your results, you’re probably less interested in seeing how a variation compared to the baseline and more interested in predicting whether a variation will be better than baseline when implemented in the future. In other words, you want to make sure your experiment results pay off.

Optimizely’s Stats Engine powers our statistical significance calculations. It uses a statistical framework that is optimized to enable experimenters to run experiments with high statistical rigor while making it easy for anyone to interpret results. Specifically, Stats Engine allows you to make business decisions on results as experiments are running, regardless of preset sample sizes and the number of goals and variations in an experiment.

As with all statistical calculations, it is impossible to predict a variation’s lift with certainty. This is why our Results page displays Optimizely’s level of confidence in the results that you see. This way, you can make sophisticated business decisions from your results without an expert level of statistical knowledge.

Optimizely is the first platform to offer this powerful but easy-to-understand statistical methodology. Other statistics frameworks don’t make this so easy.

Learn more about the **Stats Engine from our Optimizely Academy**, or check out this [webinar on statistical concepts for]
experimentation with co-founder Pete Koomen.

How Stats Engine works

To learn about the nuts and bolts of how Stats Engine works and how to interpret the results it generates, check out these articles:

- Why Stats Engine results sometimes differ from classical statistics results
- Why Stats Engine controls for false discovery instead of false positives
- How and why statistical significance changes over time

Statistical concepts and techniques

You may also find it useful to read up on the statistical concepts and techniques Stats Engine uses, which we describe in these articles:

- Statistical significance in Optimizely
- Stats Accelerator in Optimizely
- Difference intervals and improvement intervals
- False discovery rate control

Further reading

If you'd like even more background on how Optimizely's Stats Engine works, here are a few resources:

- Blog post explaining the Stats Engine
- Technical whitepaper on the statistical model
- E-book on statistics for online experiments