

Data-driven attribution methodology

There are two main parts to the data-driven attribution methodology: (1) analyzing the available path data to develop custom conversion probability models, and (2) applying to that probabilistic data set a sophisticated algorithm that assigns fractional conversion credit to your marketing touchpoints.

Develop conversion probability models from available path data

Data-driven attribution uses the available path data—including data from both converting *and* non-converting users—to understand how the presence of particular marketing touchpoints impacts your users' probability of conversion. The resulting probability models show how likely a user is to convert at any particular point in the path, given a particular sequence of paid search clicks.

Algorithmically assign conversion credit to marketing touchpoints

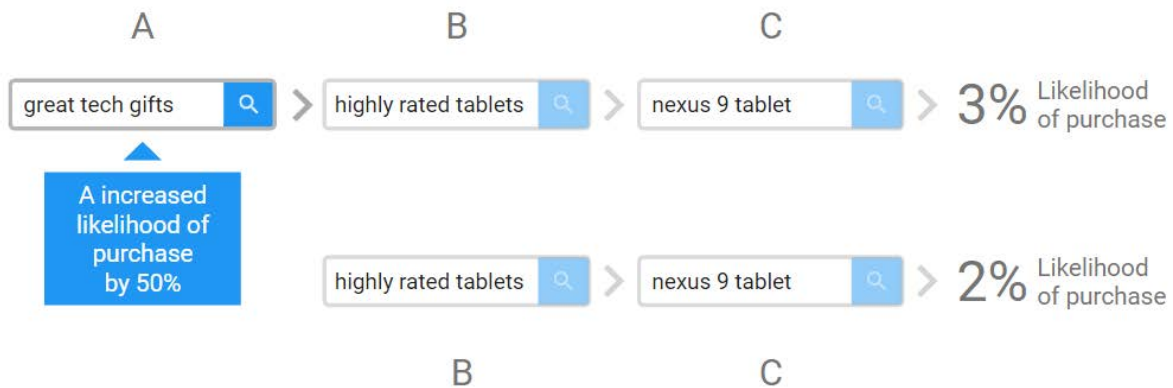
Data-driven attribution then applies to this probabilistic data set an algorithm based on a concept from cooperative game theory called the *Shapley Value*. The *Shapley Value* was developed by the economics Nobel Laureate Lloyd S. Shapley as an approach to fairly distributing the output of a team among the constituent team members.

In the case of data-driven attribution in AdWords, the “team” being analyzed has AdWords paid search clicks (for example, *Campaign A*, *Campaign B*) as “team members,” and the “output” of the team is conversions. The data-driven attribution algorithm computes the counterfactual gains of each AdWords paid search click—that is, it compares the conversion probability of similar users who were exposed to these clicks, to the probability when one of the clicks does not occur in the path.

The actual calculation of conversion credit for each touchpoint depends on comparing all of the different permutations of touchpoints and normalizing across them. This means that the data-driven attribution algorithm takes into account the order in which each touchpoint occurs and assigns different credit for different path positions. For example, *Campaign A* preceding *Campaign B* is modeled separately from *Campaign B* preceding *Campaign A*.

Example

In the following high-level example, the combination of *Campaign A*, *Campaign B*, *Campaign C* leads to a 3% probability of conversion. When *Campaign A* is removed, the probability drops to 2%. The observed 50% increase when *Campaign A* is present serves as the basis for attribution.



Explore your data-driven model and select it for reporting/bidding

Use the Attribution Modeling report to compare models and to identify optimization opportunities. Once you've decided you want to switch one or more of your conversion actions to the data-driven model, go ahead and [select](#) the model to use it for reporting/bidding in AdWords.