

# lastminute.com's 12-week geo-experiment reveals a 43% uplift in Google AdWords values

## lastminute.com

### About lastminute.com

- Part of Travelocity and Sabre Holdings
- Leading UK online travel and leisure retailer, with over 1.6 million visitors per week
- This experiment was designed and conducted by the lastminute.com Marketing Analytics team, including William Beckler, Krzysztof Osiewalski, Adam Roman and Kamil Bartocha
- lastminute.com's PPC campaigns are managed by their in-house PPC team

### Goals

- Drive search ROI through accurate attribution
- Understand the value of generic search in the purchase funnel

### Approach

- Ran geo-experiment over 12 weeks in the UK
- Used only cities with 1,000+ total bookings in the time period
- Employed Bayesian inference

### Results

- Increased traffic and market share from non-branded keywords
- 43% more bookings than previously tracked from Google AdWords
- Gained insights to contribute to a more informed paid search budget optimisation strategy

### Background

lastminute.com is an online travel and leisure retailer, with over 1.6 million site visitors per week. It pioneered the online travel and leisure industry by offering its customers a 5-star lifestyle for 3-star prices, selling everything from flights, hotels, gifts and restaurants to theatre tickets.

lastminute.com recently conducted a series of sophisticated and rigorously designed online geo-experiments aimed at gaining insight into the full value of their generic (non-brand) Google AdWords activity. The company set out to determine whether there was an incremental factor from Google non-branded AdWords campaigns which was being attributed to other channels by lastminute.com's own internal tracking systems. This analysis included a study of both online and offline conversions.

lastminute.com's hypothesis was that a gap existed between orders tracked from Google (GT) and the true orders caused by Google (G). The knowledge of this true value would provide a basis for formulating strategies around budgeting and marketing channel value estimation. These decisions would be crucial for identifying the optimal distribution of constrained resources and creating a successful long-term marketing strategy.

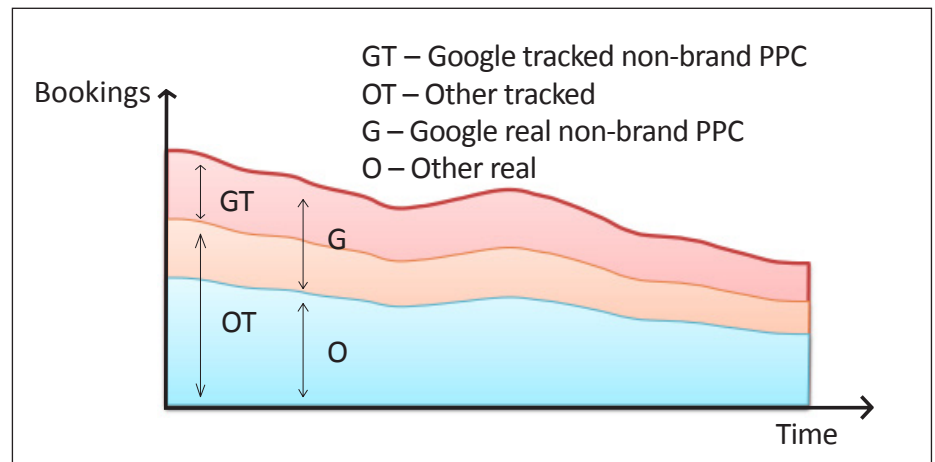


Figure 1. The orange area represents the incremental conversions that should be attributed to Google AdWords but are currently included in the 'other' channel category on a 'last click wins' basis. However, such a rule does not give proper value to channels that appear early in the conversion funnel, such as those used by customers to research and compare offers. The hypothesis to test was that a causal effect exists which is not measured properly in most tracking tools.

### Approach

In order to capture the true Google value (GT), a representative sample of cities was selected, divided into two geographical regions and assigned either into a control or a treatment group. The control group had its non-brand Google AdWords campaigns completely switched off. The experiment was conducted over a 12-week period from October 2011 to January 2012. The cities included in the analysis had a minimum of 1,000 total bookings in this time period.

Several key features ensured this test would be more robust than the typical geo-experiment:

#### Bleed and IP-based location

This aimed to prevent any bias resulting from an existing activity, which is largely caused by long-lasting browser cookies and issues with correct determination of customer location.

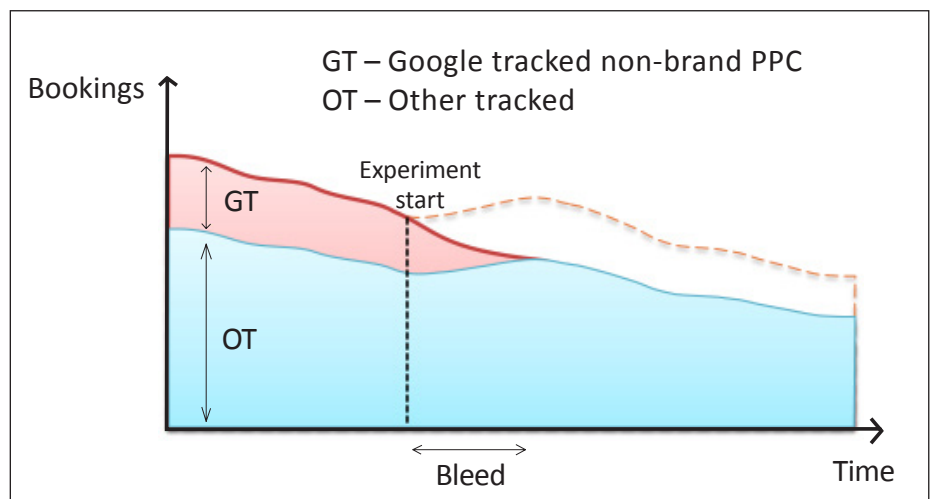


Figure 2

### Seasonality and city size drivers

An important observation that formed the basis of the experiment was that the number of bookings from individual cities was highly correlated with an overall trend, and that the ratio between these two values was fairly constant. Two important drivers were identified. First, the seasonality trend (capturing special events affecting the whole travel industry) and second, customer behaviour varying between cities due to such factors as different offline marketing activities in the past, demographic profile, brand awareness and so on.

### Statistical approach

Due to the expected presence of multiple and unknown noise sources measurement of estimation error and proper handling of uncertainty was factored into the experiment.

### Results and next steps

The core results of the study reveal that for every tracked conversion that was previously attributed to Google AdWords, 1.43 conversions should have been attributed in this way, representing a 43% uplift (the posterior distribution of X parameter can be found in Figure 3). In other words, turning off the non-branded search terms in Google AdWords will result in a 43% larger decline than reported by lastminute.com's tracking systems.

Thanks to this insight, lastminute.com's next steps include adjusting the brand's paid search budget optimisation strategy and engaging in further investigation into the causal effect of Google AdWords activity.

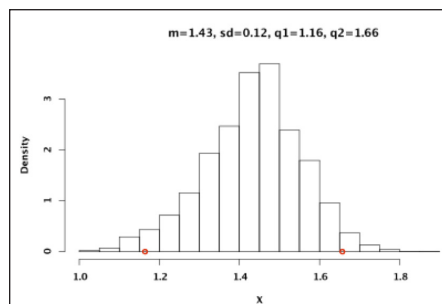


Figure 3 "The posterior distribution of the incremental factor (X). q1 and q2 denote the 2.5% and 97.5% posterior quantiles".

### Appendix: lastminute.com's statistical model

"In each city (n) and week (t) we assume that the total number of bookings ( $B_{n,t}$ ) made through our company is a sum of bookings coming in from Google ( $G_{n,t}$ ) and through other marketing channels ( $O_{n,t}$ ) including direct navigation, offline sales, white labels, affiliate partners etc:  $B_{n,t}=G_{n,t}+O_{n,t}$ .

As the traffic from non-Google marketing channels may be different for each company or line of business, we don't want to model it separately and assume a multiplicative seasonal and city related trends:  $O_{n,t}=C_n \cdot S_t$ .

The Google factor, ( $G_{n,t}$ ) is an unknown variable which can be modeled simply by the tracked value ( $GT_{n,t}$ ) with an incremental adjustment (X):  $G_{n,t}=X \cdot GT_{n,t}$ .

We assume the error factor to be also multiplicative and strongly dependant on the seasonal factors. The final model can thus be written as  $B_{n,t}=X \cdot GT_{n,t} + C_n \cdot S_t + \epsilon_{n,t}$ , where  $\epsilon_{n,t}$  denotes the t-distribution with  $v > 2$  degrees of freedom. We abandon the normality assumption of the error term – it can be verified a posteriori. Because of different cities and seasonal factors it is dubious that variance homoskedasticity is valid. It is reasonable to assume heteroskedastic variance and bind it to the  $C_n \cdot S_t$  factor.

For the success of the analysis it is crucial to handle uncertainty in a proper way. Thus, the Bayesian inference was applied. For all parameters of interest we assume flat, but proper distributions. For the X factor we assume a uniform distribution over the [0.1, 4] interval.

To sample from the posterior distribution we used the Markov Chain Monte Carlo algorithm based on a hybrid structure of a Metropolis and Hastings step within the Gibbs sampler. The posterior distribution of X is presented in Fig. 3.

### About Google AdWords

Google AdWords is a performance based advertising program that enables businesses large and small to advertise on Google and its network of partner websites. Hundreds of thousands of businesses worldwide use AdWords for text, image, and video ads priced on a cost-per-click (CPC) and cost-per-impression (CPM) basis. Built on an auction-based system, AdWords is a highly quantifiable and cost-effective way to reach potential customers.

For more information, visit: [adwords.google.co.uk](http://adwords.google.co.uk)

