Effect of disabling third-party cookies on publisher revenue

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Goal

To empirically quantify the effect that disabling access to third-party cookies would have on the programmatic ad revenue of web publishers.

Executive Summary

We ran a randomized controlled experiment on publishers who use the programmatic arm of Google Ad Manager's serving system, in which a Google service places ads on non-Google sites across the web. We disabled access to cookies for a small fraction of randomly selected users (the treatment group). We observed that for the top 500[1] global publishers, average revenue in the treatment group decreased by 52%, with a median per-publisher decline of 64%.

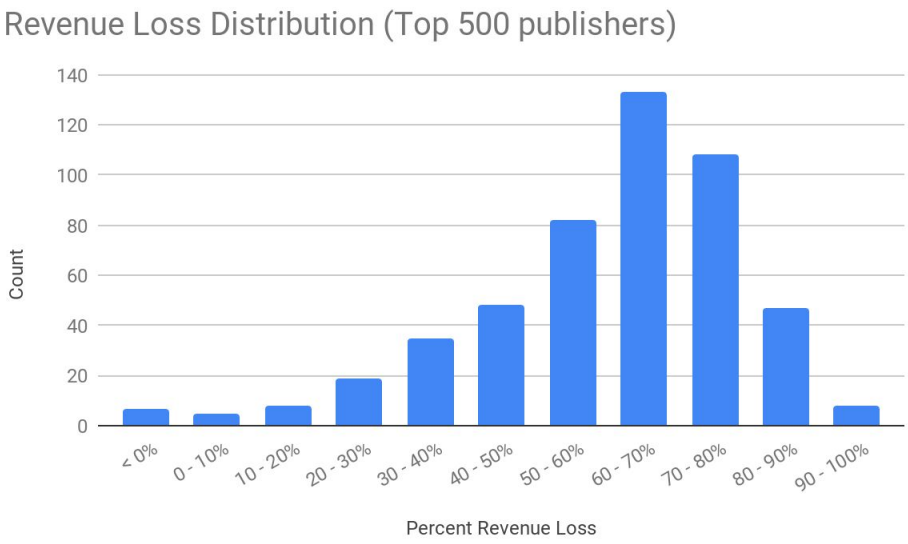
Methodology

Google has a robust experimental infrastructure for running randomized A/B experiments[2]. Using this system, we ran an experiment where we turned off the availability of personalized data for a small fraction[3] of randomly selected users through the programmatic arm of Google Ad Manager's serving system, thus effectively disabling access to cookies. The users in the treatment group saw only non-personalized programmatic ads, such as contextual ads which did not rely on the presence of third-party cookies when served through Google Ad Manager. We compared the publisher revenue from this treatment group to that of a control group who saw personalized ads as they would be normally served. The data below was gathered over a 96-day interval from May to August 2019.

Results & Statistical Analysis

We observed that for the top 500 global publishers, the average *publisher* revenue decreased by 52% for the treatment group, where we effectively disabled access to third-party cookies, with a median per-publisher decline of 64%. Of course, the revenue loss varied by publisher. The figure below shows the distribution of the revenue loss on a per-publisher basis for the top 500 publishers.

[1] Top publishers ordered by revenue earned by publisher when served programmatic ads through Google Ad Manager.
[2] This is the same experiment system used for Google's general ad serving optimizations.
[3] The experiment was applied to a small fraction of each publisher's traffic because we did not want to materially affect publisher revenue, though in aggregate the amount of traffic evaluated as part of the experiment was significant.



While a handful of publishers have a small revenue loss (<10%), the majority of publishers have losses of 50% or more, with some losing over 75% of their revenue.

While the results are highly significant[4] in aggregate, the confidence intervals are wide for some of the smaller publishers: 7 of these (representing 1.5% of the publishers observed) show no loss (i.e., more revenue in the treatment than in the control group), but the difference in revenue is so small that we attribute this to statistical noise. The second figure below shows results restricted to the 200 largest publishers, where all but one show revenue loss of greater than 10%.

When we restrict our analysis to publishers categorized in the *News* vertical, we saw an average revenue loss of 62% with a median loss of 60%.

[4] Over all Ad Manager web traffic affected by the experiment, the 95% confidence interval is under +/- 1%.

Related Work

To the best of our knowledge, this is the first publicly described randomized controlled experiment to measure the effect of disabling third-party cookies on publisher revenue. There is a body of previous work that is based on observational data, where researchers analyzed advertising logs from publishers.

While drawing strong causal conclusions from observational studies is challenging (since one must account for all relevant covariates when doing the analysis), our numbers are consistent with the findings from the majority of past academic work based on large-scale observational data analysis on this topic:

- Johnson et al. found that publishers receive 52% less revenue from users who have opted out of online behavioral advertising.
- Beales and Eisenach found that users without cookies generate at least 37.5% (when compared to users with "new" cookies) and up to 66% less revenue (compared to users with longer-lived cookies).

In contrast, a recent working paper by Marotta et al., titled *Online Tracking and Publishers' Revenues: An Empirical Analysis* reports only a 4% loss in revenue. We believe that the difference in results may be partially attributed to the fact that their analysis was performed on a single publisher (in contrast to the larger scale of previous studies), and in part due to the inherent challenges associated with the nature of observational studies (such as the need to control for many variables, some of which may themselves be influenced by the presence of cookies). Researchers at Google are in communication with the authors to better understand their methodology and the difference in results.

Additional Reflections

We only measured first-order effects in our analysis. Removing third-party cookies could have second-order effects on publishers, such as 1) decreased spend by their advertising clients as a result of lower return on investment from non-personalized ads and moving budgets to different channels, and 2) increased overhead costs as a result of publishers having to adjust their business models when third-party cookies are disabled. Accurately quantifying these second-order effects can be extremely challenging, and was not addressed by this study.

Another observation from the randomized experiment: users expressed greater dissatisfaction with non-personalized ads because they were not interested in what the ads were showing them. Users can choose to stop seeing an ad by clicking on an "X" that appears on a display ad to close the ad. We saw a 21% increase in user clicks to close an ad by the treatment group (who encountered non-personalized ads). When prompted with a list of reasons why they wanted to stop seeing an ad, there was a 21% increase in user clicks on the reason "Not interested in this ad" and a 29% increase in user clicks on the reason "Seen this ad multiple times".