

Privacy and Anti-Tracking: The spillover effects of opt-out cookies

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INTRODUCTION

A group of major advertisers from DAA have created a framework for opting out of behaviorally targeted advertising with **opt-out cookies**. Opt-out cookies don't stop ads from being shown to Internet users – and thus protect in part the income of websites and advertisers.

- In principle, the use of opt-out cookies on a site should prevent participants in the DAA alliance from tracking visitors' personal information.
- We should *not* expect firms not participating in the alliance (i.e., non-DAA members) to reduce tracking in the presence of those opt-out cookies.

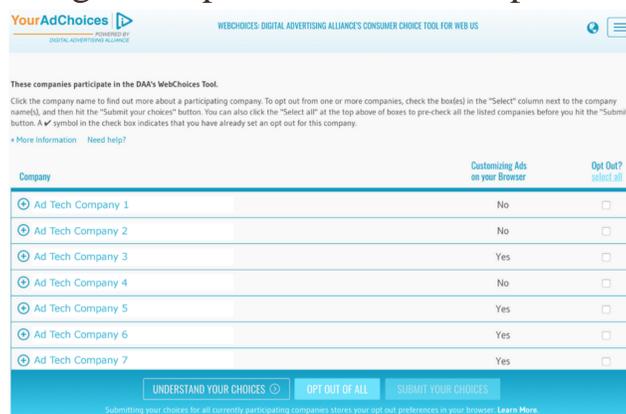


Fig. 1. Website interface of installing DAA opt-out cookies
<https://youradchoices.com/choices-faq>

RESEARCH QUESTIONS

Our project investigates the impact on online tracking of users' adoption of opt-out cookies on non-DAA members:

- Does tracking from non-DAA vendors decrease in presence of DAA opt-out cookies?
- If so, does the extent of reduction stay constant across site categories (e.g., news, shopping, social media)?

METHODOLOGY

- ❑ Our study relies on an ongoing large-scale randomized field experiment. Under IRB approval, we recruit participants from Amazon Mechanical Turk and install a custom-designed extension on their browsers.
- ❑ The extension randomly assign users to two browsing condition: either with opt-out cookies or with no treatment.
- ❑ All the meta-data of HTTP requests associated with users' online browsing are collected. Taking advantage of different online tools, we classify those requests under four criteria which work as variables to identify targeted and non-targeted ads.

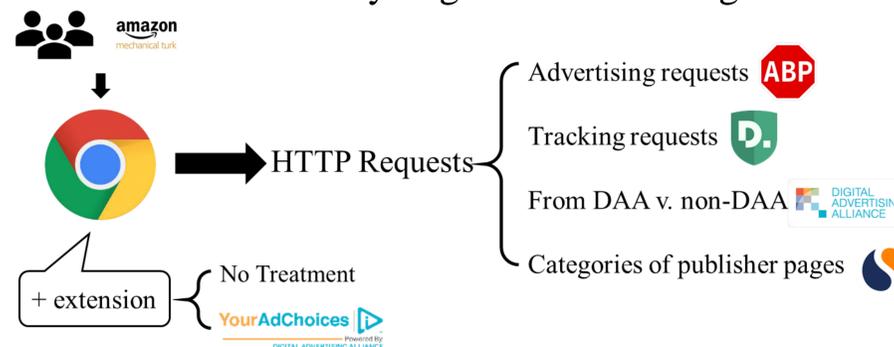


Fig. 2. Experiment Design

<https://twitter.com/amazonmturk>, <https://www.google.com/chrome/>, <https://youradchoices.com/>, <https://adblockplus.org/en/>, <https://disconnect.me/>, <https://www.similarweb.com/>

RESULTS & CONCLUSIONS

- ✓ Opt-out cookies reduce the amount of online tracking also from non-DAA vendors. (Table 1)
- ✓ The extent to which the tracking is reduced does not differ significantly across site categories. (Table 2)
- ✓ **CONCLUSIONS:** The adoption of opt-out cookies may have an unexpected **spillover effect** in terms of reducing tracking. The **spillover effect** remains constant across site categories.
- ✓ **FUTURE WORK:** We are collecting more data to test the robustness of the findings and investigate their underlying mechanism.

Condition	Control	Opt-out
Unique webpages	13,905	18,807
All HTTP requests	2,900,808	2,023,311
All HTTP requests per page	208.6	107.6
Ad-requests	471,309	220,892
Ad-requests per page	33.9	11.7

Table 1. Navigation counts, HTTP requests, and ad-requests by experimental condition

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Zijun Ding is looking for Ph.D. positions in privacy and information security. If you have such position available, please feel free to contact him at dingzj.17@sem.tsinghua.edu.cn.

Receiver	Condition	Control		Opt-out	
		DAA members	Non-DAA members	DAA members	Non-DAA members
Sender	Average	28.83	22.12	10.67	8.17
	News	274.22	188.17	98.85	92.75
	Arts	43.21	73.06	28.17	17.79
	Shopping	16.81	12.24	6.70	4.82
	Social media	16.20	16.48	17.30	14.35
	Search	0.90	0.87	0.60	0.54
	Science	12.37	13.96	10.15	4.68

Table 2. Average number of HTTP requests per page for targeted ads

