

The Welfare Effects of Advertising Exposure

Fengyang Lin*, **Cristobal Cheyre***, Alessandro Acquisti**

*Cornell University **Carnegie Mellon University



Motivation



- Ad-blocker adoption has grown to ~40% of Internet users
- Advertisers need users to accept advertising to sustain themselves
- Users have expressed concerns about the online advertising ecosystem: Pervasive tracking, advertising overload, exploitative ads...
- We conduct a pre-registered randomized field experiment to assess:
 - Users' valuation of ad-blocking tools and of online advertising
 - Evaluate how ad-blocking and advertising exposure affects users' welfare

Research Questions

- **How much do people value their use Ad-Blockers? Do some people value their ability to see Online Ads?**
 - We use an incentive compatible design to evaluate:
 - The minimum WTA of ad-blocker users to uninstall their ad-blocker and not use it for 1 month
 - The minimum WTA of those not using ad-blockers to install one and use it for 1 month
- **What happens with users' valuation of online experiences when we ask them to stop/start using an Ad-Blocker?**
 - We study how our intervention affects: Online experiences, attitudes towards online advertising, satisfaction with online purchases, subjective-wellbeing, and future use of ad-blockers
- **Our results inform how to make online advertising safer and more acceptable for users**

Related Work

- The adoption of Ad-Blockers:
 - Has a positive impact on user engagement with the internet (Miroglio et al. 2018)
 - Lead to negative consequences for users: reduction of online content quality (Shiller et al. 2018, Gritckevich et al. 2021)
 - Reduced search activities and consumer spending (Todri, 2022)
- These studies are mostly observational, and there are self-selection issues. Our setting is a field-study in which we ask people to uninstall/install an Ad-Blocker
- Our focus is how advertising exposure affect **users' online browsing and purchase experiences**, and their **valuation of ad-blocking tools**



Experiment Design

We conducted a 4-weeks long pre-registered randomized field experiment in which:

- We **exposed ad-blocker users to ads** by asking them to uninstall their ad-blocker
- We **shielded non-users from ads** by asking them to install an ad-blocker



Experimental Design

For Ad-Blocker users

Entry Survey (Week 0)

- Ask WTA to uninstall their Ad-Blocker for 4 weeks
- Survey about advertising and online experiences

If $WTA < \$20.3$, 50% are invited to uninstall their Ad-Blockers, the rest are our control group

Weekly Surveys (Week 1, 2, 3)

- Survey about online experience

Exit Survey (Week 4)

- Re-elicited WTA
- Survey about advertising and online experiences

Post-exit Survey (Week 6)

- Detect how many have re-installed Ad-Blocker

Experimental Design

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For Ad-Blocker non-users

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- Detect how many have uninstalled their Ad-Blocker



Recruitment and Sample Size

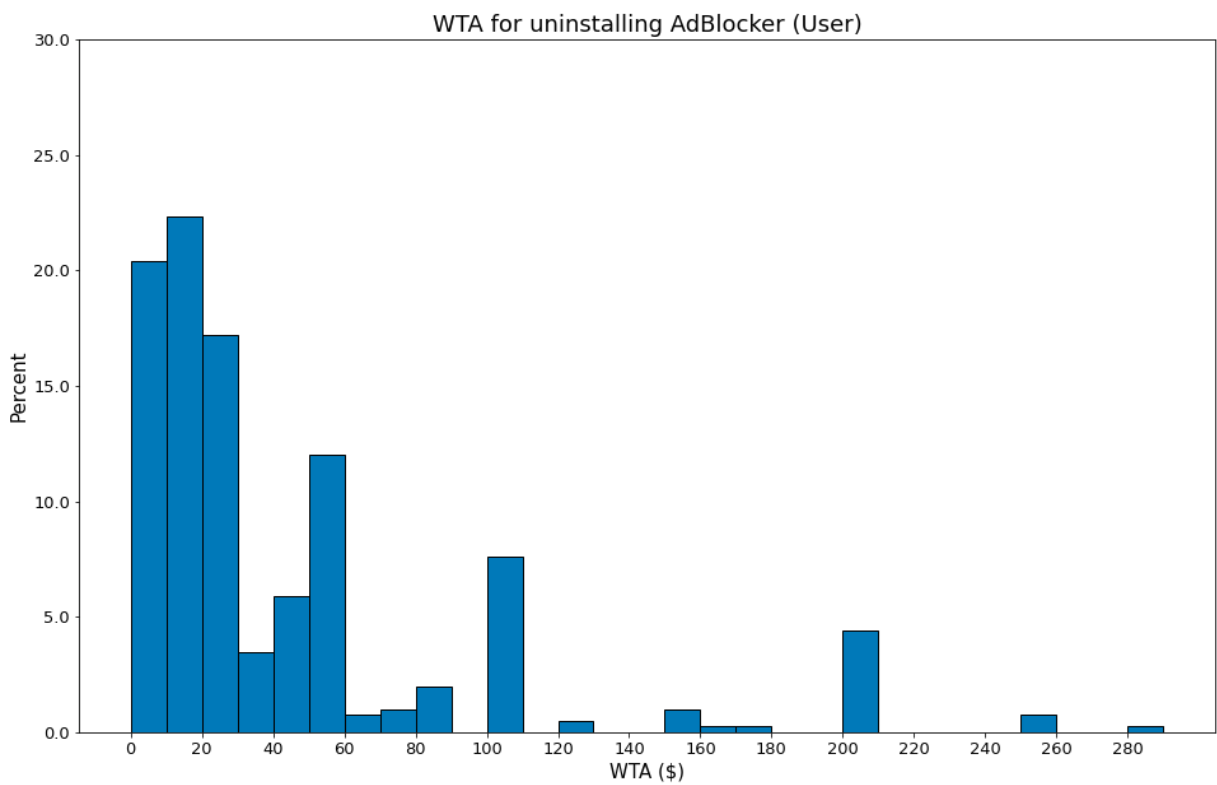
Group		Passed Prescreening and Invited to Entry	Completed Entry Survey	Invited to Control/Treatment	Completed Exit Survey	Completed Post-Exit Survey
User	Treatment	618	447	112	90	73
	Control			112	99	92
Non-User	Treatment	665	356	108	77	65
	Control			113	104	96



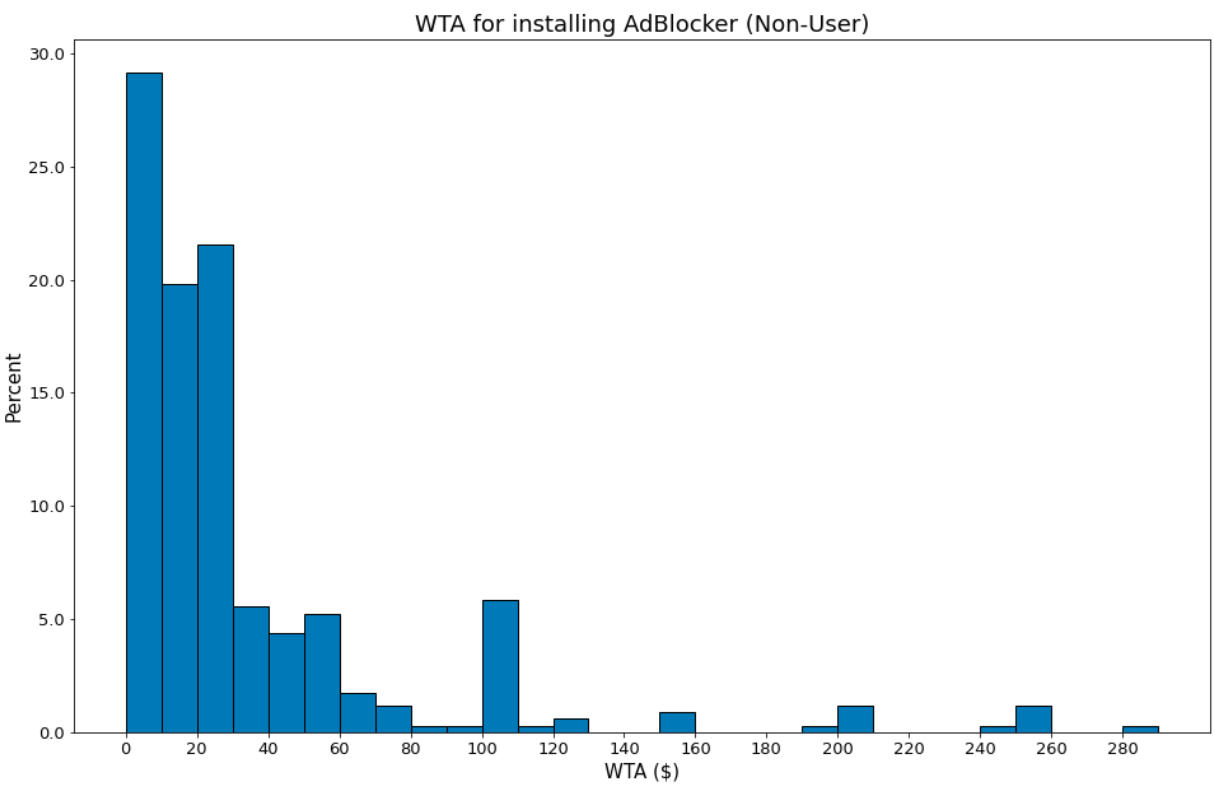
Differences at Entry (Ex-Ante Differences)



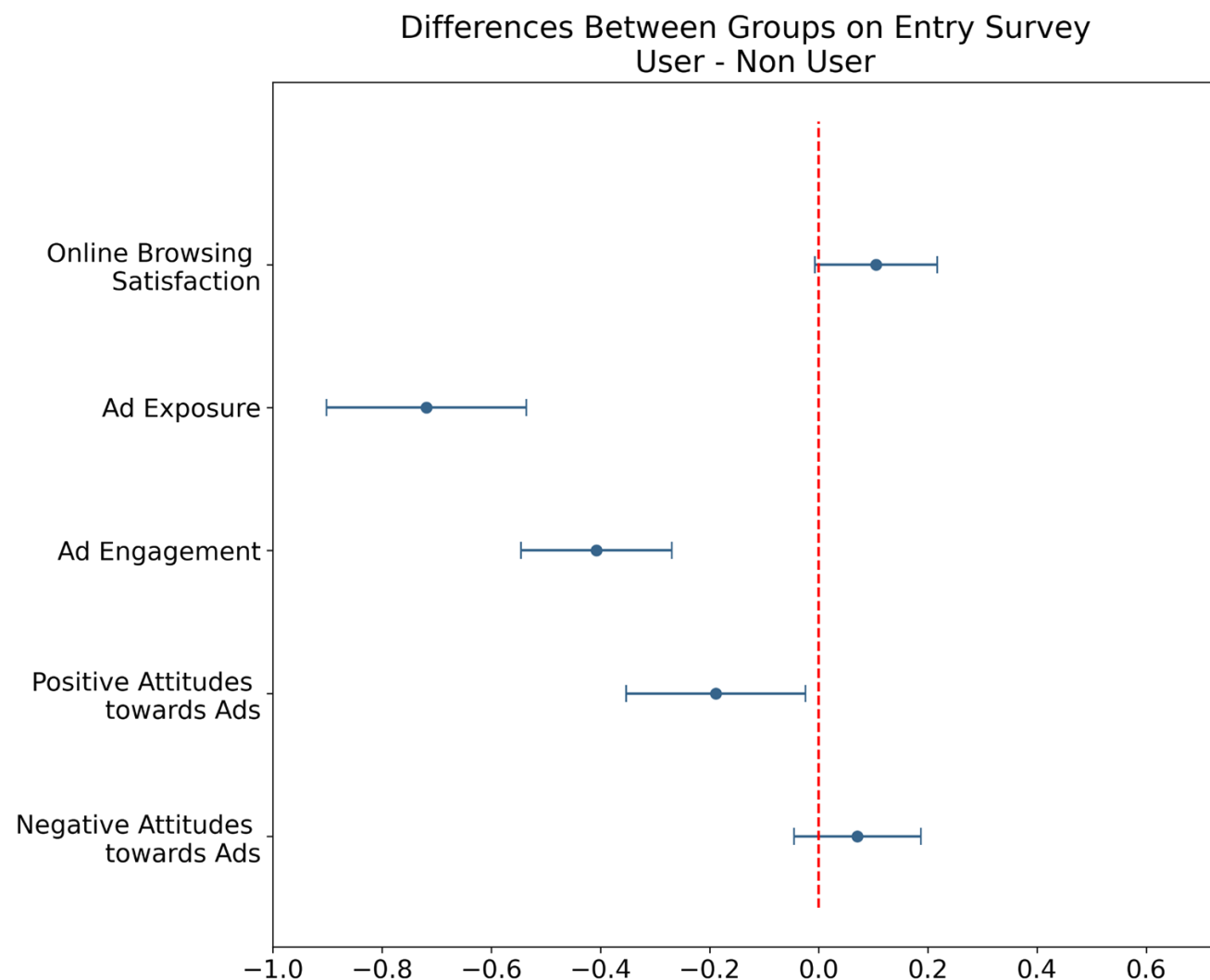
WTA distribution



Count	Min	Mean	Median	Max
447	1	211.48	20	50,000



Count	Min	Mean	Median	Max
356	0.5	5,672.15	20	1,000,000



Differences in entry survey suggest **self-selection into Ad-Blocking usage**
This makes it interesting to assess how the **treatment** will affect **each group**



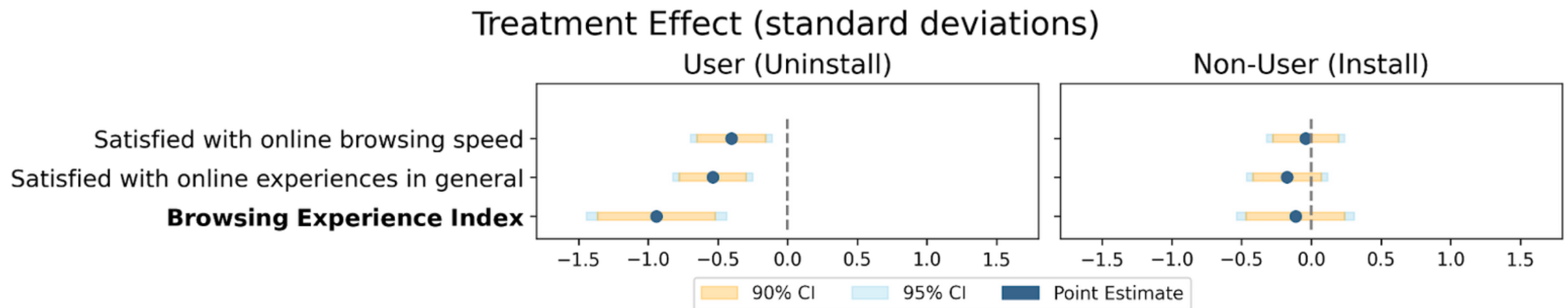
Treatment Effects

Treatment Effects

- To evaluate the treatment effects, we use an IV framework to account for non-compliance (Allcot et al., 2020)
 - IV: Treatment assignment
 - Dependent variable in first stage is compliance with treatment assignment, which is measured weekly through an automated mechanism incorporated in the surveys
- Outcomes are grouped by families of variables by creating index with their inverse covariance (Anderson, 2008)
 - Outcome index is normalized so that the standard deviation for the control group is 1
 - Effect sizes can be interpreted in terms of standard deviations of the control group

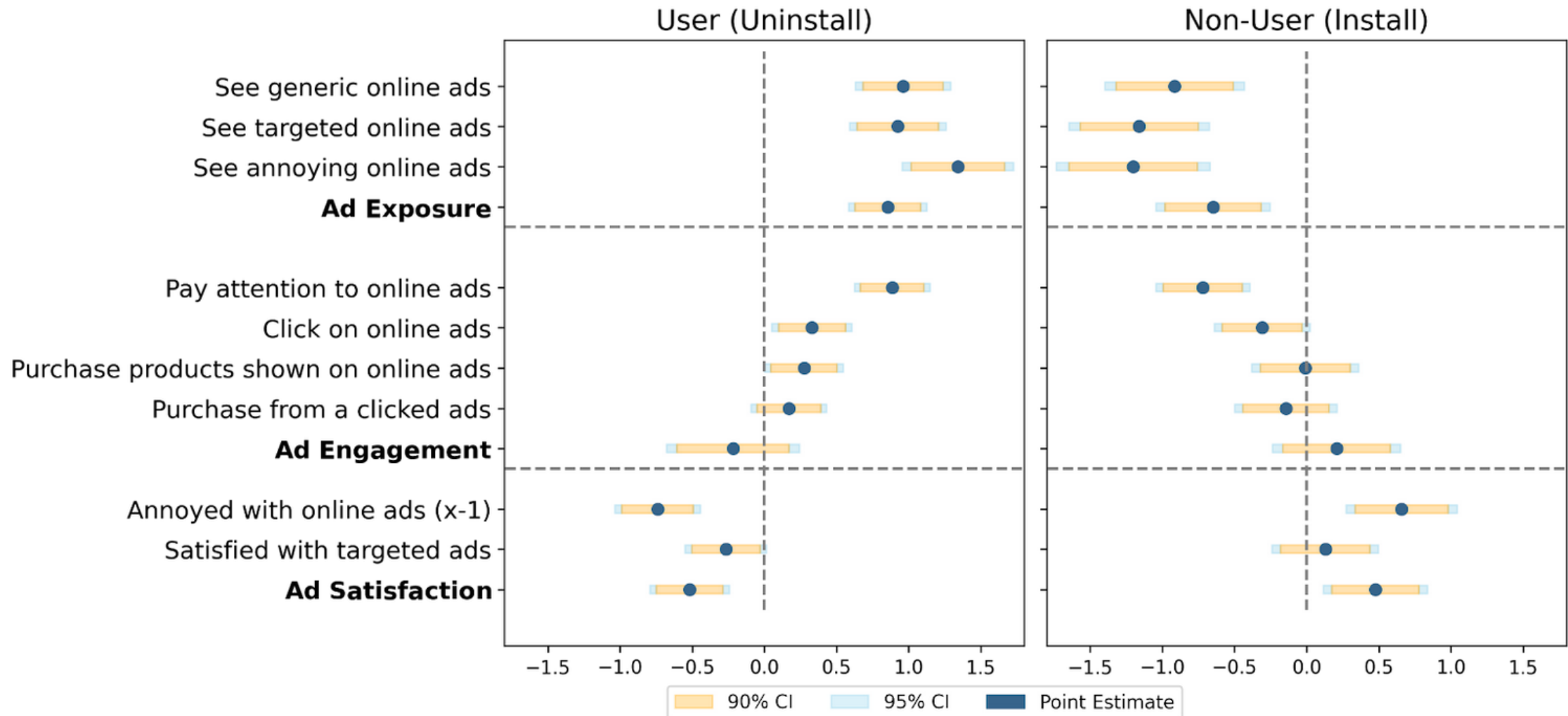
Browsing Satisfaction

- Browsing experience is one of the key reasons for people to adopt ad-blockers according to prior studies
- Users that we asked to uninstall their ad-blocker report a lower satisfaction with their browsing experiences

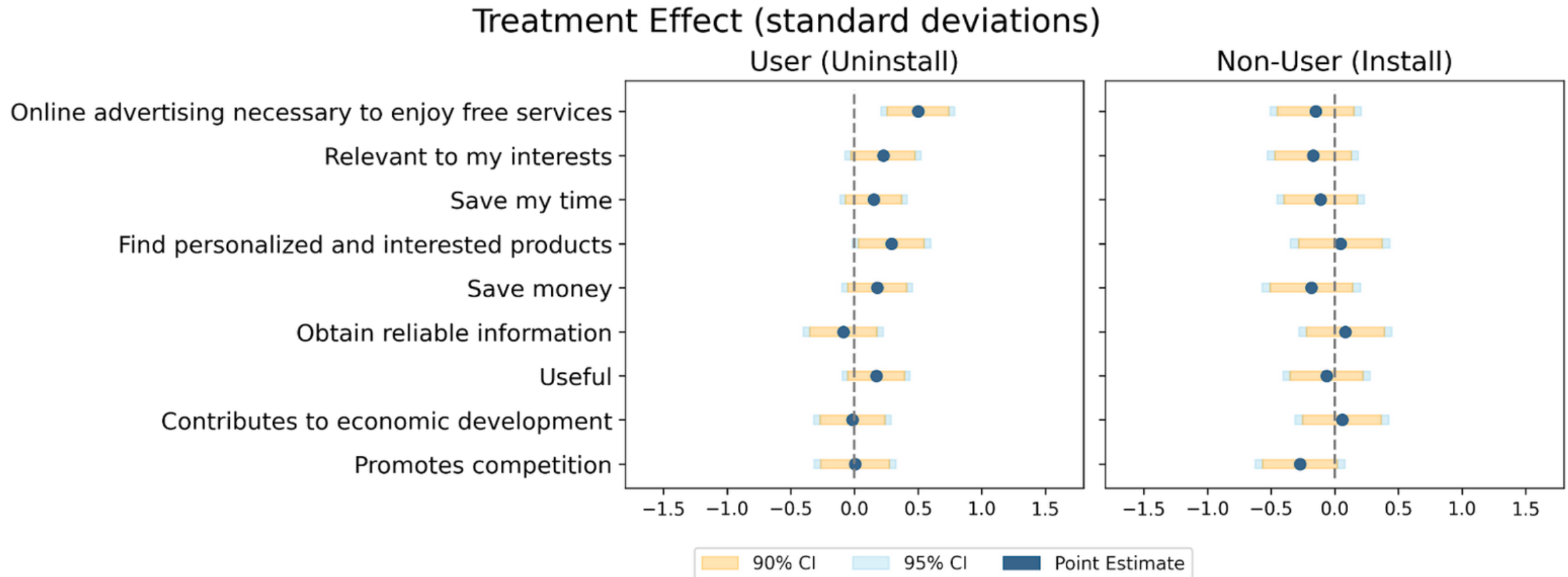


Advertising Exposure and Engagement

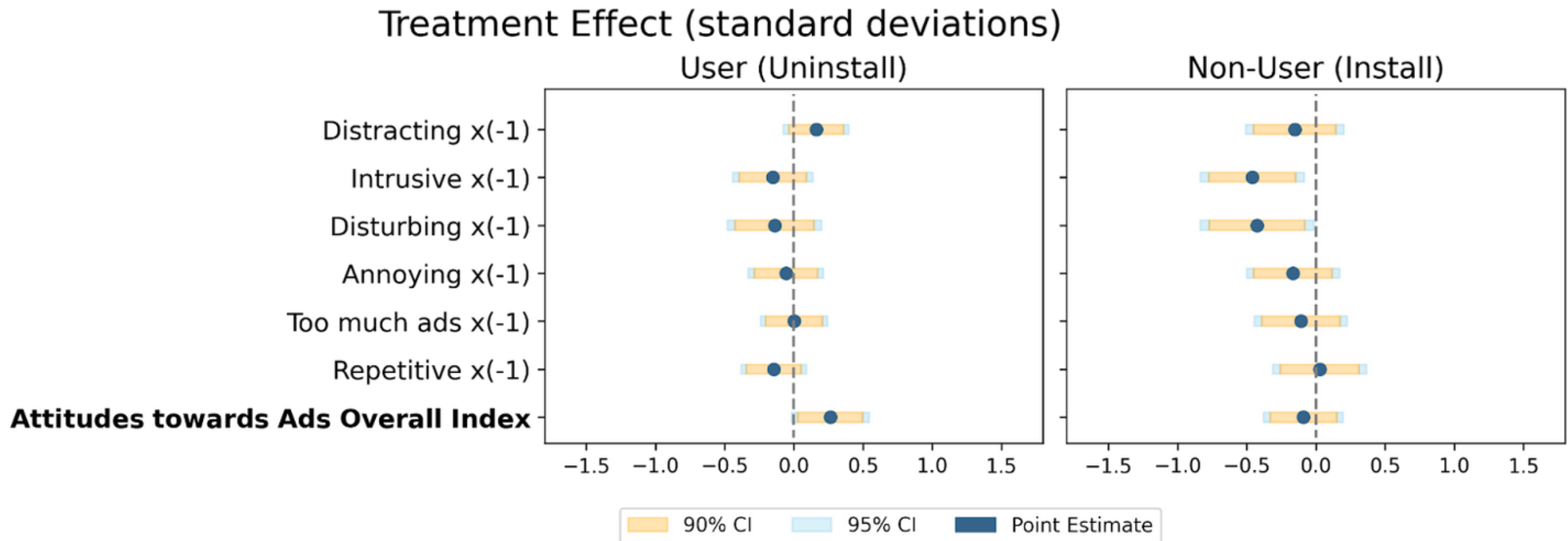
Treatment Effect (standard deviations)



Attitudes Towards Online Advertising

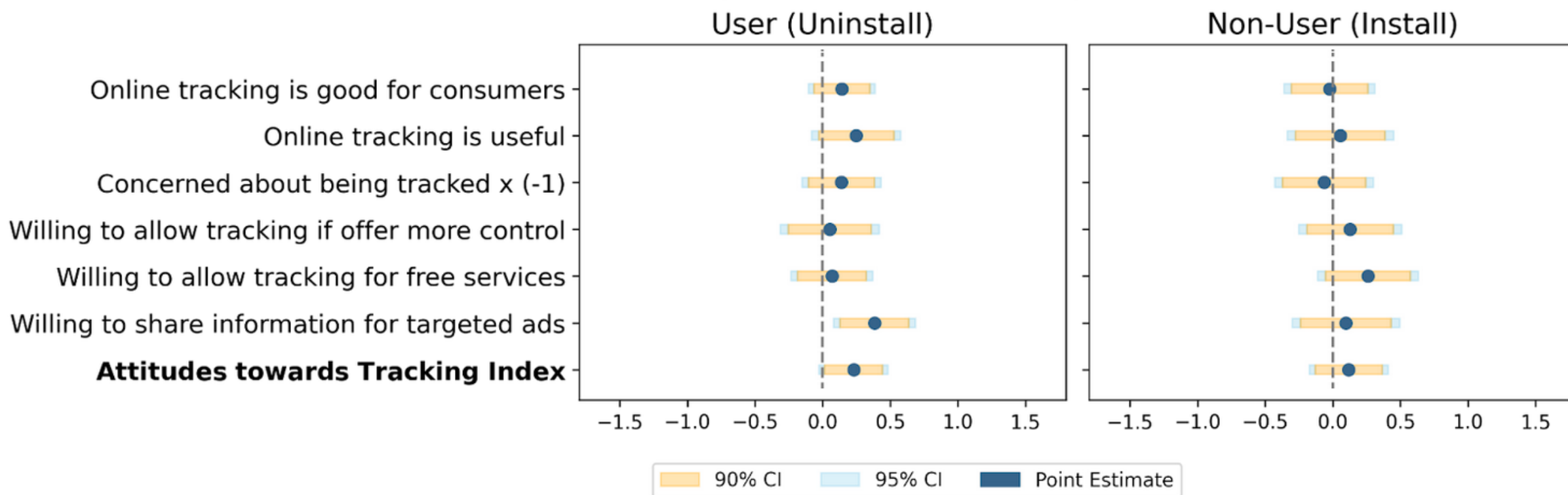


Attitudes Towards Online Advertising



Attitudes Towards Online Tracking

Treatment Effect (standard deviations)

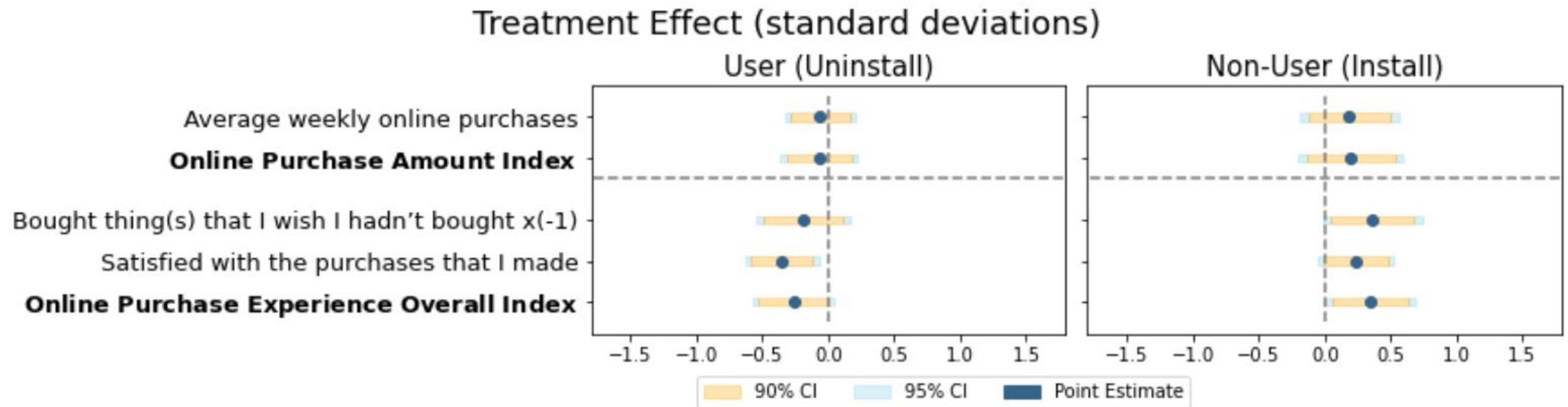


Attitudes Towards Online Advertising and Online Tracking

- **Ad-blocker users** that were asked to **uninstall** their ad-blocker became **more cognizant of usefulness of advertising**:
 - Needed to enjoy free products and services
 - Helps finding personalized and interesting products
 - Willing to share information for targeted ads
 - Index by family of variables marginally significant
- **Non-users** that were asked to **install** an ad-blocker **do not change their opinion** about advertising much
- How does it affect economic outcomes?

Online Spending and Satisfaction with Purchases

- Advertising exposure does not seem to affect overall spending
- But it is associated with negative purchase experience outcomes




Subjective Wellbeing

- Advertising exposure may negatively affect users' wellbeing by fostering unending desires and therefore depressing life satisfaction (Michel et al., 2019)
- Or by exposing them to ads that they would rather not see

The New York Times

How Targeted Weight Loss Ads Can Haunt Future Brides

When women post about their engagements and upcoming weddings on social media, an unexpected, potentially damaging specter arrives: targeted weight loss ads.

 Share full article



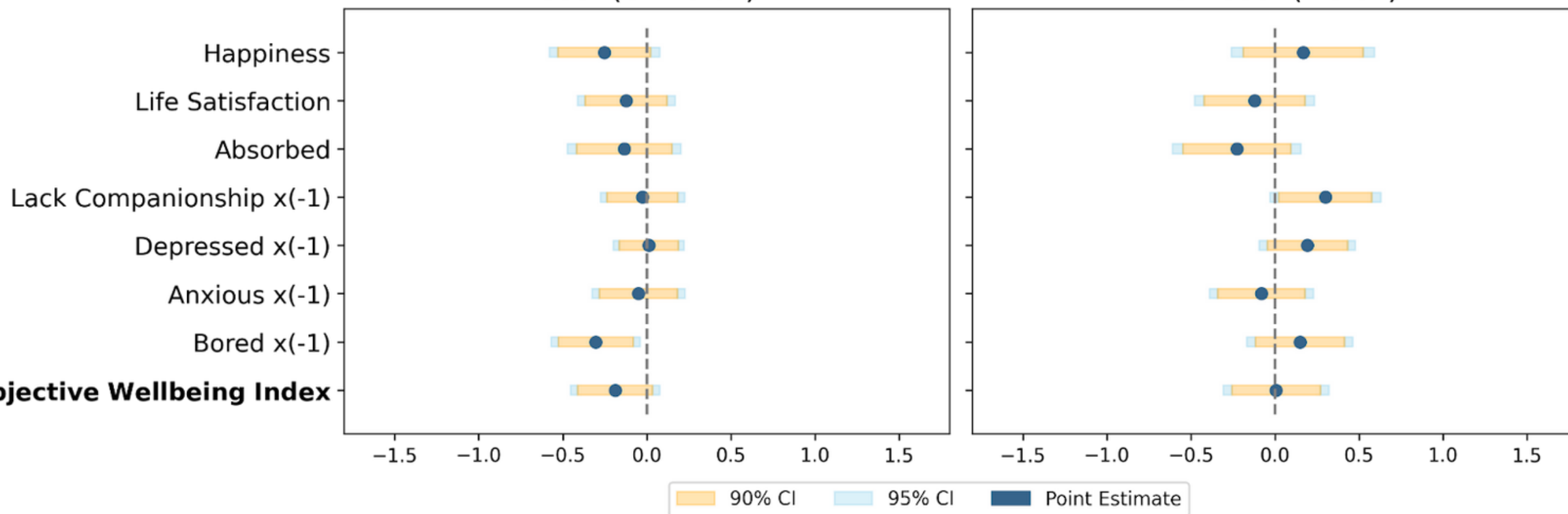
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Subjective Wellbeing

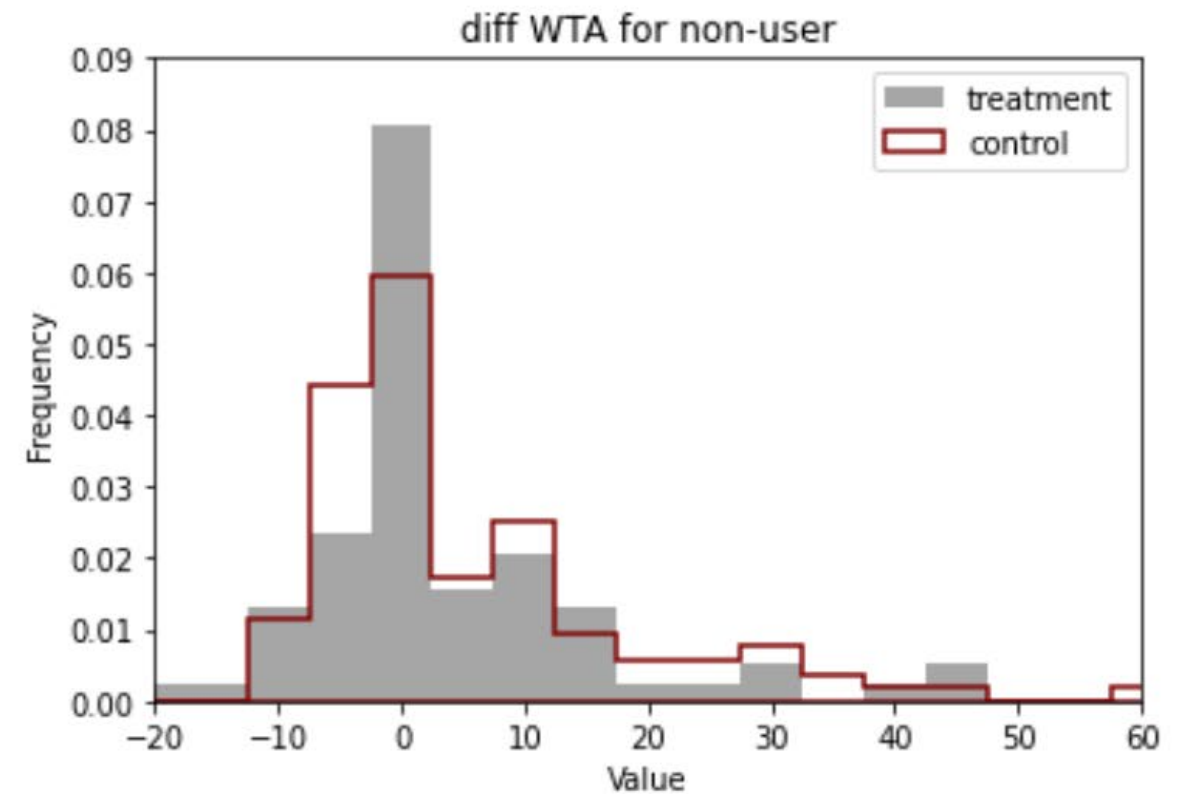
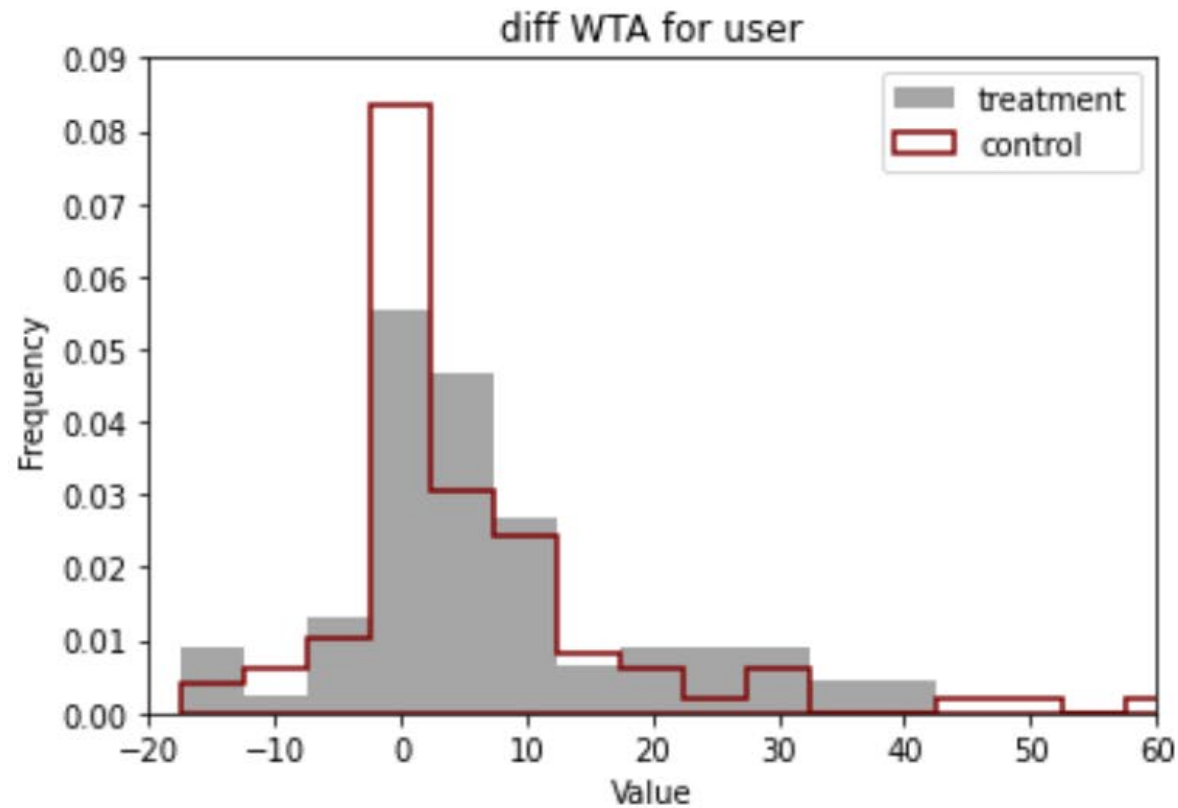
Treatment Effect (standard deviations)

User (Uninstall)

Non-User (Install)



Changes in WTA

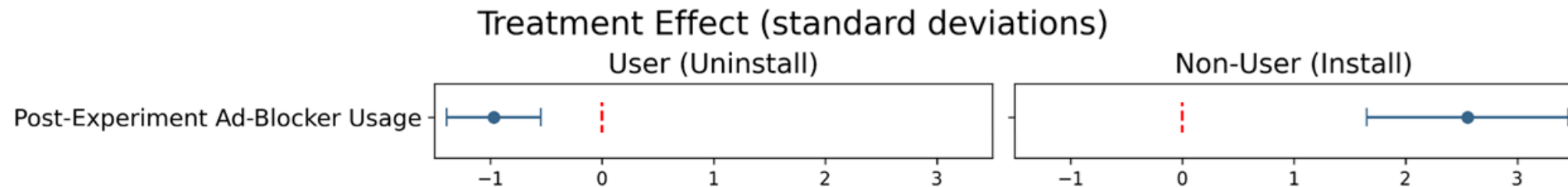


Changes in WTA

- Understanding changes in WTA is complicated, as both treatment and control are adjusting their valuations for different reasons
- For the control group:
 - Users ask for the same or more money to uninstall their ad-blocker
 - Non-users ask for the same or less money to install an ad-blocker
 - Seems that users have set preferences, while non-users are more open to try an ad-blocker
- For the treatment group:
 - Distribution more concentrated around 0, and several users below 0
 - For users, more of them ask for more money than first round

Future Use of Ad-Blockers

- Two weeks after the experiment ends, we detect who has installed/uninstalled the ad-blocker. We find a strong effect of the treatment on future usage



Conclusion

- Advertising exposure is associated with negative browsing experiences
- Exposing ad-blocker users to ads made them more cognizant of need of ads, and some positive aspects of them
- Shielding non-users from ads did not change their opinion about advertising or tracking
- Use of ad-blockers had a clear effect on purchase outcomes:
 - No change on overall spending
 - Those that remove their ad-blocker experience worse outcomes, those that install an ad-blocker experience better outcomes



Conclusion – Ad-Blockers Tug of War

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YouTube's Crackdown Spurs Uninstalls of Ad Blockers

YouTube expanded a “test” that threatens to cut off users. Developers of the tools are scrambling to respond.



Adblock for Youtube™

Featured 4.4 ★ (298.1K ratings)

Extension

Workflow & Planning

9,000,000 users

4.4 out of 5 ★★★★★

298.1K ratings • Google doesn't verify reviews. [Learn more about results and reviews.](#)

Details

Version
5.4.0

Updated
December 1, 2023

[Report a concern](#)

Offered by
AdRemover

Size
134KiB

Languages
50 languages ⓘ

Developer
✉ Email ▾

Conclusion

- Online publishers need users to accept advertising
- They can try to make the costs of using ad-blockers high by blocking the use of ad-blockers or degrading users experience for those that use them
- Or the advertising ecosystem can implement changes to make advertising more acceptable for users
- Our results suggest that if publishers want users to accept advertising, they should focus on minimizing the negative welfare impact of ads rather than making the use of Ad-Blockers costly:
 - Ad-blocker users seem open to accepting advertising
 - But advertising exposure is associated with negative online outcomes

Questions?

