What is a Digital Cookie Worth?

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Abstract

Tracking a user's online browsing behavior to target her with relevant ads has become pervasive. There is an ongoing debate about the value of such tracking and the associated loss of privacy experienced by users. We inform this debate by quantifying the value of using different kinds of potentially privacy-intrusive information in targeted advertising. We collect a large proprietary dataset with over 1.3 million individual impression-bid-level observations. The data has detailed cookie information, as well as the bids placed by the firm for placing ads. We also know whether a user saw the ad and whether a purchased occurred. First, we find that using more information from cookies increases the accuracy of prediction of purchases, but at a decreasing rate. We also find that firm's bidding decision (how much to bid for an ad) can be accurately predicted by cookie information. We then estimate the effect of an ad on users' purchase probability. In particular, we examine whether users who have a high baseline purchase probability are also more likely to be influenced by ads. We find that on average ads do not have a statistically significant impact on purchase probabilities of consumers. However, individuals who have a high baseline purchase probability do respond positively to ads. To overcome potential endogeneity in ad placement, we use an instrumental variable and find that these results are robust. Finally, we simulate different privacy policy regimes by restricting different kinds of user information from being used for targeted advertising and quantify the impact such restrictions have on sales. We find that using more privacy intrusive variables for targeting can increase ad effectiveness by almost 85%.

Speaker Profile

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