Location, Location, Location: Repetition and Proximity Increase Advertising Effectiveness

Yahoo! Research partnered with a nationwide retailer to study the effectiveness of display advertising on online and in-store sales for more than three million shared customers. We measure the impact of higher ad impression frequency using a simple experimental design on Yahoo!: users in the 'Full' treatment group see the retailer's ads, users in the 'Control' group see unrelated control ads, and users in the 'Half' treatment group see an equal probability mixture of the retailer and control ads. We find statistically significant evidence that the retailer ads increase sales 3.6% in the Full group relative to the control group. Doubling the average number of impressions per person, from 17 to 34 in a two-week period, nearly doubled the treatment effect. Leveraging our experimental design, we find that the returns to ad frequency are approximately linear among those who were eligible to see up to 50 ads and the marginal return to an additional ad exposure is 4 cents. We also find evidence that the ads had a stronger effect on customers who live closest to the retailer's brick-and-mortar locations, who purchased recently, loyal customers, and wealthy customers.