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Title:
The Design and Targeting of Reward Programs

Abstract:
This paper considers a scalable approach for the optimal design and targeting of loyalty reward promotions. Specifically, we consider reward programs characterized by two parameters: a purchase threshold (called a hurdle), above which customers receive an incentive (called a reward). This approach has three components: i) an experiment to exogenously vary the parameters of the reward program, ii) an approach to extrapolate marginal treatment effects beyond the experimental design parameters (leveraging recent advances in treatment effect extrapolation), and iii) an optimization over the design parameters, conditioned on the extrapolation. The extrapolation approach is easy to estimate, accommodates selection based on unobserved heterogeneity, and establishes partial identification bounds when such extrapolations are non-parametric. More generally, the approach applies to many similar experimental contexts in marketing wherein consumers’ unobserved heterogeneity affects inference about treatment effects.