

Abstract #: 131

Author Name: Brian Arthur Smith

Author Company: Pacific Gas and Electric Company

Second Author's Name: Josh Schellenberg, Nexant

Abstract Title: Alternatives to Randomized Control Trials: Addressing the Growing Pains of Opt-Out Programs

Abstract Text:

Utilities world-wide have comparative usage experiments (Home Energy Reports, or HERs) and similar opt-out programs that use randomized control trials (RCTs) to estimate impacts. In spite of their success, HER programs are suffering growing pains: how can they be scaled to serve larger portions of utility customers? Holding back large numbers of customers to serve as control groups provides robust estimates, but they constrain the ability to grow the treatment populations significantly. Rarely have regulators approved deemed savings values for HERs, and for good reason: each experiment involves a unique sample frame, so proscribing a set value for impacts is risky. A more promising alternative to large-scale RCTs may be estimates of impacts that use statistical methods from the fields of machine learning, Bayesian statistics and econometrics. These methodological alternatives show promise for reducing the need for large control groups, but their predictive power relative to the "gold standard" of the RCT has yet to be tested rigorously. Leveraging the data from a large, long-standing HER experiment, this presentation compares the results of a large RCT to three alternative methods for estimating impacts: ① -Variations of pre-post designs that use fixed effects regression models without using control groups; ② -Matched control groups that estimate impacts through quasi-experimental methods including propensity score and stratified matching rather than with RCTs; ③ -RCTs with significantly reduced control group sizes. By comparing these alternative methods to a large RCT that has been thoroughly vetted, this study provides rigorous, empirical comparisons of estimates.