

COMPARISON GROUPS IN BEHAVIOR, DR, AND EE PROGRAM EVALUATION

Moderator: Tony Larson, National Grid

PAPERS *(in order of appearance)*:

Losing Control: What Will Happen if Randomized Controlled Trials are Phased Out of Behavioral Program Evaluation

Josh Schellenberg, Nexant
Aimee Savage, Nexant
Marshall Blundell, Nexant
Jonathan Cook, Nexant
Brian Arthur Smith, Pacific Gas & Electric

Matching and VIA: Quasi-Experimental Methods in a World of Imperfect Data

Eileen Hannigan, Illume Advising, LLC
Jan Cook, Accelerated Innovations

Matching for DR and EE Impacts

Seth Wayland, Opinion Dynamics

SESSION SUMMARY:

Comparison Groups provide a significant benefit for impact evaluation studies where a control and treatment group is needed to accurately calculate the energy savings. There are various methods that help define and calculate these comparison groups. The methods try to alleviate any bias and match the characteristics of the treatment group by only providing the program implemented differences between the control and treatment groups. The current preferred method is Randomized Controlled Trials (RCTs). Each of the presenters in this session will explore other comparison group methods, providing each methods strengths and weaknesses.

Schellenger et al. analyzes the results from a three year evaluation from one of the largest behavioral programs in the country. In this study, one of the primary goals was to calculate the results for different control group methods and compare them to the preferred method of Randomized Controlled Trials (RCTs). This presentation tries to find alternatives to RCTs by exploring the use of Propensity Score Matching (PSM), Bayesian Structured Time Series (BSTS), and Regression Tree with Random Effects (RE-EM Trees) as methods. These results are then compared to RCTs and the accuracy of the each method will be presented on.

Hannigan et al. presents on the alternatives to RCTs when there is data limitations to the use of RCTs. This presentation will discuss the use of Variation in Adoption (VIA) and the Matched Control Group method for an opt-in behavioral program deployed by four utilities over six years. The presentation will compare the two methods and explore each methods strengths and limitations, detail the extent to which the data fulfill the assumptions, and discuss practical consequences of using each method. In addition, there will be a discussion on the sensitivity to each method to sample size, variability and program-specific deployment and treatment conditions.

Wayland presents on different comparison group approaches used for demand response and energy efficiency impact analysis. This presentation will explore solutions, using matching methods, to overcome these non-program differences. Using matching as non-parametric preprocessing can help reduce uncontrolled variation, identify outliers, help balance covariate distribution and reduce model

dependence and bias. This presentation will explore several different matching methods presenting on both their strengths and weaknesses and presenting the overall impact that these non-program differences can have.