2021 ASA Connecticut Chapter Traveling Course

Guidelines for Using State-of-the-Art Methods to Estimate Propensity Score and Inverse Probability of Treatment Weights When Drawing Causal Inferences

Instructors: **Beth Ann Griffin**, PhD and **Lane Burgette**, PhD
RAND Corporation

Course Description: The estimation of causal effects is one of the primary activities of most longitudinal research studies. For example, analysts might want to understand whether a particular substance abuse treatment program is effective for its clients, whether school-based substance prevention actually reduces substance use, whether interventions can improve the quality and efficiency of mental health care, or whether incentives can increase military recruiting or the retention of service members. Controlled experiments are held as the gold standard for estimating such effects. However, experiments are often infeasible for many reasons and only observational data, in which participation in a program or intervention is out of the control of the researchers, are available for analysis.

This short course will provide an introduction to causal modeling using the potential outcomes framework and use of propensity score weights in the estimation of causal effects from observational data. The course will also provide step-by-step guidelines on how to estimate and perform diagnostic checks of propensity score weights for evaluations examining the relative effectiveness of two interventions. The course will also discuss methods for assessing the sensitivity of finding to unobserved covariates. Attendees will gain hands on experience estimating propensity score weights, evaluating the quality of those weights, and utilizing the weights for estimating intervention effects. The course can provide demonstrations of available software in R, SAS, Stata and Shiny (as needed) for fitting the models and opportunities for conducting analyses. The primary goals of the course are for attendees to have an understanding of how to implement propensity score weighting using state-of-art-methods and insights into some of the practical issues that evaluating the quality of propensity score weights involve.

FRIDAY
September 10
2021
9:00 am – 1:00 pm ET

Registration Fees:
ASA CT Member: **$30**
ASA Member: **$40**
Non-ASA Member: **$50**
Students/Post-Docs: **$30**

Register Online by September 6:

Eventbrite Registration Link

The Zoom link to this **virtual event** will be e-mailed to registered participants before the event

Hosted by the

Connecticut Chapter of the American Statistical Association

Please consider joining the ASA CT Chapter

ASA Connecticut Chapter

Questions?

Contact
ctchapterasa@gmail.com

Schedule (9:00 am – 1:00 pm ET):

09:00-10:15	Introduction to causal inference, potential outcomes, and propensity scores
10:15-10:30	Break
10:30-11:00	GBM for propensity score estimation
11:00-11:20	Alternatives for weight estimation - CBPS, entropy balancing, super learner
11:20-11:45	Omitted variable sensitivity analyses
11:45-12:00	Break
12:00-12:55	Propensity score weighting in R - binary treatments
12:55-1:00	Wrap-up

Instructors:

Beth Ann Griffin is a senior statistician at the RAND Corporation. Her research has largely focused on causal effects estimation when using observational data. Her substantive research has primarily fallen into three areas: (1) substance abuse treatment for adolescents, (2) the impact of non-genetic factors on Huntington's disease, and (3) the effects of gun and opioid state policies on outcomes. She co-directed the RAND Center for Causal Inference between 2013 and 2018. Currently, Dr. Griffin is a co-investigator on Gun Policy in America, a RAND initiative to understand the effects of gun policies, and is co-directing RAND's Opioid Policy Tools and Information Center (OPTIC) to foster innovative research, tools and methods for tackling the opioid epidemic. She has also served as the principal investigator on four grants sponsored by the National Institute of Drug Abuse (NIDA), the latest devoted to developing new tools and methods to understand causal mediation and moderation and assess the sensitivity of effect estimates to omitted variables (www.rand.org/statistics/twang). Dr. Griffin's research has appeared in leading journals such as Journal of the American Statistical Association, Annals of Applied Statistics, Journal of Causal Inference, and Epidemiology. She also serves on the editorial board of the Annals of Applied Statistics. She received her Ph.D. in biostatistics from Harvard University.

Lane Burgette is a senior statistician and associate director of the Economics, Sociology, and Statistics Department at the RAND Corporation. He is also a faculty member at Pardee RAND Graduate School. His research focus is causal inference and Bayesian modeling in the health and social sciences. Burgette's methodological interests include models of categorical outcomes, propensity score methods, methods for missing data, and nonparametric modeling. His applied research interests include physician payment policy; cost, quality, and value of health care; and treatment for alcohol and other drug abuse. Burgette was trained at Whitman College, the University of Wisconsin-Madison, and Duke University and has taught at Duke and Johns Hopkins Universities. Burgette received his Ph.D. in statistics from the University of Wisconsin.