



DEPARTMENT OF STATISTICS

COLLOQUIA SERIES

Monday November 21st, Talk: 4:15 PM — Science Center 300H
Reception: 3:50 PM

Guest Speaker: Kari Lock Morgan

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Balancing Covariates via Propensity Score Weighting: The Overlap Weights

Abstract:

Propensity score weighting is often utilized to achieve covariate balance when comparing treatment groups in observational studies. Here we define a general class of balancing weights that balance the weighted covariate distribution between groups. This class includes the commonly used inverse-probability weights, but we illustrate here why these weights can be problematic if covariates differ substantially between groups. We propose another set of balancing weights, the overlap weights, which weight each unit by its probability of being in the opposite group. These overlap weights possess desirable properties such as minimizing the asymptotic variance of the weighted average treatment effect among balancing weights, and guaranteeing exact balance for covariate sample means. These weights are illustrated, and compared with the standard inverse probability weights, in two applications; a non-causal situation estimating racial disparity in health expenditure and a causal situation estimating the effect of a medical procedure on survival.