MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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Balancing Covariates via Propensity Score Weighting in Causal Inference

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Zoom

Abstract
Covariate balance is crucial for causal inference. However, lack of balance is common in observational studies. In this talk, we overview a general class of weighting strategies for balancing covariates: the balancing weights. These weights incorporate the propensity score to weight each group to an analyst-selected target population. This class unifies existing weighting methods, including inverse-probability weights as special cases. We introduce the overlap weighting (OW) scheme, in which each unit's weight is proportional to the probability of that unit being assigned to the opposite group. The overlap weights are bounded, minimize the asymptotic variance of the weighted average treatment effect among the class of balancing weights, and also possess a desirable small-sample exact balance property. The overlap weights target at the population in clinical equipoise, or more broadly, the population with substantial overlap in baseline characteristics between two groups. We illustrate the method by several real-world health studies.

Bio
Fan Li is a professor in the Departments of Statistical Science, and Biostatistics and Bioinformatics at Duke University. Her primary research interest is statistical methods for causal inference, with applications to health and social sciences. She also works on Bayesian analysis and missing data. She is an associate editor of Journal of the American Statistical Association, Bayesian Analysis, and Observational Studies.

Zoom details can be found at: https://stt.natsci.msu.edu/stt-colloquium-zoom-info/

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