Universität Zürich[UZH]

JACOBS CENTER

Jacobs Center Research Seminar Series

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Moving Toward Best Practice When Using Propensity Score Weighting in Survey Observational Studies

Propensity score weighting is a common method for estimating treatment effects with survey data. The method is applied to minimize confounding using measured covariates that are often different between individuals in treatment and control. However, existing literature does not reach a consensus on the optimal use of survey weights for population-level inference in the propensity score weighting analysis. Under the balancing weights framework, we provided a unified solution for incorporating survey weights in both the propensity score of estimation and the outcome regression model. We derived estimators for different target populations, including the combined, treated, controlled, and overlap populations. We provide a unified expression of the sandwich variance estimator and demonstrate that the survey-weighted estimator is asymptotically normal, as established through the theory of M-estimators. Through an extensive series of simulation studies, we examined the performance of our derived estimators and compared the results to those of alternative methods. We further carried out two case studies to illustrate the application of the different methods of propensity score analysis with complex survey data. We concluded with a discussion of our findings and provided practical guidelines for propensity score weighting analysis of observational data from complex surveys.

Monday, March 3, 2025, 14:30 h

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