



Join the Department of Biostatistics and Epidemiology for a
Special Guest Lecture
 on Tuesday, January 10th at 11:00am via Zoom

"Model-robust and efficient covariate adjustment for cluster-randomized trials"



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Cluster-randomized trials are increasingly used to evaluate interventions in routine practice conditions, and researchers often adopt model-based methods with covariate adjustment in the statistical analyses. However, the validity of model-based covariate adjustment is unclear when the working models are misspecified, leading to ambiguity of estimands and risk of bias. In this talk, I will first introduce an adaption of two conventional model-based methods, generalized estimating equations and linear mixed models, with weighted g-computation to achieve robust inference for cluster-average and individual-average treatment effects. Then, I will introduce an efficient estimator for each estimand that allows for flexible covariate adjustment and additionally addresses cluster size variation dependent on treatment assignment and other cluster characteristics. Such cluster size variations often occur post-randomization and, if ignored, can lead to bias of model-based estimators. In the end, I will briefly discuss my work on other aspects of cluster-randomized trials, including covariate-adaptive randomization, survival analysis, stepped-wedge design, and test-negative design.

Dr. Bingkai Wang is a postdoctoral researcher in the Statistics and Data Science Department of the Wharton School, University of Pennsylvania (advised by Dylan Small and Nicholas P. Jewell). He got his PhD degree from the Biostatistics department at Johns Hopkins Bloomberg School of Public Health (advised by Michael Rosenblum and Brian Caffo). His research interests include causal inference for infectious disease research, randomized clinical trials, model robustness, causal machine learning, and array data analysis.

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