JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Department of Biostatistics

BIOSTATISTICS SEMINAR

Repeated Randomization in Cluster Randomized Trials

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Abstract

Randomization was a key contribution of Sir Ronald Fisher to the conduct of scientific investigations and statistical methods. Along with the protective aspects of randomization, Fisher also noted that the distribution induced by randomization can form the basis of inference. Indeed, in some instances, the randomization test and related procedures seem to be the only tools available for inference. Several authors have noted the advisability of re-randomizing if, in a particular instance, the observed randomization leads to an unacceptable degree of imbalance in important factors between and among the treatment groups. This talk considers problems arising in the design of relatively small cluster randomized trials, which have been widely used in recent years for evaluation of health-care strategies. The balance match weighted (BMW) design, introduced in Xu and Kalbfleisch (2010, Biometrics), applies propensity score matching ideas to choose a design through a re-randomization approach with the general aim of minimizing the mean squared error of the treatment effect estimator. The methods are evaluated by simulation. Extensions of the methods to multiple armed trials are also considered and simply implemented numerical methods are proposed to achieve good matching algorithms. Analysis issues are also discussed. Standard parametric and nonparametric methods are often inappropriate for analysis of designs involving re-randomization, though the distribution generated by the re-randomization approach provides a general framework for analysis.

This is based on joint work with Dr. Zhenzhen Xu.

The Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics, Monday, October 28, 2013, 12:15-1:15pm, Room W4030, School of Public Health
(Refreshments: 12:00)

We request that lunch be eaten before or after seminar and not during the seminar

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