Faculté de pharmacie

Séminaire de l'axe

« Médicament et santé des populations »

"The Curious Case of the Instrumental Variable Estimator for the Complier Average Causal Effect."

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À l'invitation du professeur Mireille Schnitzer

In randomized clinical trials, subjects often do not comply with their randomized treatment arm. Although one can still unbiasedly estimate the causal effect of being assigned to treatment using the common Intention-to-Treat (ITT) estimator, there is now potential confounding of the causal effect of actually *receiving* treatment. Basic alternative estimators such as the per protocol or as treated estimators have been used, but are generally biased for estimating the causal effect of interest. Balke and Pearl (1997) and Angrist, et al. (1996) independently proposed an instrumental variable (IV) estimator that would estimate the causal effect (the Complier Average Causal Effect — CACE) of receiving treatment in a subpopulation of people who would comply with treatment assignment (i.e. the compliers).

In this talk, I will first review the CACE and the IV estimator. I will then dissect the instrumental variable estimator in order to compare it to the per protocol and as treated estimators. I will show that the basic IV estimator and its confidence interval can be computed from basic summary statistics that should be reported in any randomized trial. My formulation of the IV estimator will also allow for simple sensitivity analyses that can be done using a basic Excel spreadsheet. This work appears in an article under review at the American Journal of Epidemiology and is co-authored by Ian Shrier, Jay Kaufmann and Robert Platt.

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