RUTGERS UNIVERSITY
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Seminar

Speaker: Dylan Small, Department of Statistics, University of Pennsylvania

Title: Error Free Milestones in Error Prone Measurements

Date: Wednesday October 28, 2009

Time: 3:20 PM

Place: 552 Hill Center

Abstract

A predictor variable or dose that is measured with substantial error may possess an error-free milestone, such that it is known with negligible error whether the value of the variable is to the left or right of the milestone. Such a milestone provides a basis for estimating a linear relationship between the true but unknown value of the error-free predictor and an outcome, because the milestone creates a strong and valid instrumental variable. We develop inferences that are nonparametric and robust, and in the simplest cases, exact and distribution free. We also consider multiple milestones for a single predictor and milestones for several predictors whose partial slopes are estimated simultaneously. Examples are drawn from the Wisconsin Longitudinal Study, in which a BA degree acts as a milestone for sixteen years of education, and the binary indicator of military service acts as a milestone for years of service.

This is joint work with Paul Rosenbaum