STATISTICS SEMINAR

UW-Department of Statistics www.stat.wisc.edu

TITLE:

Limitless Regression Discontinuity

Abstract: In a regression discontinuity design (RDD), assignment to treatment versus a control condition is determined by the value of a particular baseline variable, R. In one recent RDD, R is the average of a student's grades in his first year at university, while the treatment condition is academic probation, forced upon a student if his R falls below a threshold. The RDD setup can also be used to estimate deaths attributable to a natural disaster, for example Hurricane Maria, by contrast of mortality series before and after the catastrophic event. Classical analysis of RDDs parametrically models outcomes as linear in R and the intervention variable, using ordinary least squares to estimate the slope, intercept and intervention effect. Some recent RDD methods relax linearity assumptions by contrasting limits of $E(Y|R=r)$ as r approaches a cut-point, c, from either side; others avoid passing to limits by supposing that falling to the left or the right of the threshold is essentially random, conditionally upon falling close to the threshold. Each of these approaches turns out to be difficult to reconcile with the academic probation and Hurricane Maria examples. Limitless regression discontinuity relaxes assumptions of classical regression discontinuity analysis in a somewhat different manner, involving potential outcomes but also integrating concepts and methods from robust statistics. The method is equally comfortable with discrete and continuous running variables. It is uniquely equipped to meet the significant, somewhat misunderstood threat indicated by failure of McCrary's test. In combination with polynomial specifications, it dramatically improves the classical method, reducing RMSE by factors upwards of 100. It is straightforward to implement in R and Stata. This is joint work with Adam C. Sales, University of Texas-Austin.

Speaker:

Ben Hansen

Associate Professor of Statistics
University of Michigan

Time & Place:

Wednesday,
November 20, 2019
4:00, Room 140
Bardeen
Cookies & Coffee @
3:30, Rm 1210 MSC

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