BIOSTATISTICS SEMINAR

Noise-Induced Randomization in Regression Discontinuity Designs

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Regression discontinuity designs are used to estimate causal effects in settings where treatment is determined by whether an observed running variable crosses a pre-specified threshold. While the resulting sampling design is sometimes described as akin to a locally randomized experiment in a neighborhood of the threshold, standard formal analyses do not make reference to probabilistic treatment assignment and instead identify treatment effects via continuity arguments. Here we propose a new approach to identification, estimation, and inference in regression discontinuity designs that exploits measurement error, or other noise, in the running variable. Under an assumption that the measurement error is exogenous, we show how to estimate causal effects using a class of linear estimators that weight treated and control units so as to balance a latent variable of which the running variable is a noisy measure. We find this approach to facilitate inference for familiar estimands from the literature, as well as policy-relevant estimands that correspond to the effects of realistic changes to the existing treatment assignment rule. We demonstrate the method with a study of retention of HIV patients, and evaluate its performance using both simulated data and a regression discontinuity design artificially constructed from test scores in early childhood.

Thursday October 6, 2022, 3:30-4:30 PM Eastern

133 Rosenau Hall

Virtual using link and info below.

Link: https://unc.zoom.us/j/92602267820?pwd=YW1wN1pjdUNVd1A4TTl2OStmVHBjQT09

Meeting ID: 926 0226 7820 Passcode: 533114

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