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STATISTICS COLLOQUIUM

MONDAY, MARCH 9, 2015

TALK: 4:15 PM — SCIENCE CENTER RM. 705

RECEPTION: 3:50 PM — SCIENCE CENTER, 7TH FLOOR

**“Evaluating the Effect of University Grants on Student Dropout:
Evidence from a Regression Discontinuity Design Using Bayesian
Principal Stratification Analysis”**

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ABSTRACT

Regression discontinuity (RD) designs are often interpreted as local randomized experiments: a RD design can be considered as a randomized experiment for units with a realized value of a so-called forcing variable falling around a pre-fixed threshold. Motivated by the evaluation of Italian university grants, we consider a fuzzy RD design where the receipt of the treatment is based on both eligibility criteria and a voluntary application status. Resting on the fact that grant application and grant receipt statuses are post-assignment (post-eligibility) intermediate variables, we use the principal stratification framework to define causal estimands within the Rubin Causal Model. We propose a probabilistic formulation of the assignment mechanism underlying RD designs, by re-formulating the Stable Unit Treatment Value Assumption (SUTVA) and making an explicit local overlap assumption for a subpopulation around the threshold. A local randomization assumption is invoked instead of commonly invoked continuity assumptions.

We also develop a model-based Bayesian approach to select the target subpopulation(s) with adjustment for multiple comparisons, and to draw inference for the target causal estimands in this framework. Applying the method to the data from two Italian universities, we find evidence that university grants are effective in preventing students from low-income families from dropping out of higher education.

Joint work with Fan Li and Alessandra Mattei.