

STATISTICS COLLOQUIUM

TUESDAY, FEBRUARY 12, 2013

TALK: 2:00 PM — SCIENCE CENTER RM. 705

RECEPTION: 1:50 PM — SCIENCE CENTER, 7TH FLOOR

**“Using Secondary Outcomes and Covariates to Sharpen Inference in
Randomized Experiments with Noncompliance”**

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ABSTRACT

We develop new methods for analyzing randomized experiments with noncompliance and, by extension, instrumental variable settings, when the often controversial, but key, exclusion restriction assumption is violated. We show how existing large-sample bounds on intention-to-treat effects for the subpopulations of compliers, never-takers and always-takers can be tightened by exploiting the joint distribution of the outcome of interest with a secondary outcome, for which the exclusion restriction is satisfied, or with a pretreatment variable. The derived bounds can be used to detect violations of the exclusion restriction and the magnitude of these violations in instrumental variables settings. It is shown that the reduced width of the bounds depends on the strength of the association of the auxiliary variable with the primary outcome and the compliance status. We also show how the setup we consider offers new identifying assumptions of intention-to-treat effects. The role of the auxiliary information is shown in two examples of a real social job training experiment and a simulated medical randomized encouragement study. We also discuss issues of inference in finite samples and show how to conduct Bayesian analysis in our partial and point identified settings.

This is joint work with Barbara Pacini.