Stanford University
Department of Statistics

DEPARTMENTAL SEMINAR

4:30pm, Tuesday, January 24, 2017
Sloan Mathematics Center Room 380C

*** Refreshments in Sequoia Lounge after the presentation ***

Speaker: Sam Pimentel, University of Pennsylvania

Title: Constructed second control groups and attenuation of unmeasured biases

Abstract:

It is sometimes claimed that if an irrelevant observed covariate is left unmatched in an observational study, then it will influence treatment assignment haphazardly, diminishing biases from unmeasured covariates. We prove that this is true in a limited way under certain conditions. Unfortunately the conditions are neither inconsequential nor easy to check in empirical work, and are often implausible. We suggest the result is most useful in constructing a second control group, so the investigator can see more in available data without necessarily believing the required conditions. One control group controls for the possibly irrelevant observed covariate, the other control group either leaves it uncontrolled or forces separation; the investigator views one situation from two angles under different assumptions. A pair of sensitivity analyses for the two control groups is constructed around the possibility of slight bias attenuation in one control group. Issues are illustrated using an observational study of the possible effects of cigarette smoking as a cause of increased homocysteine levels, a risk factor for cardiovascular disease.