DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

50th Anniversary Seminar Series

Dr. MIAO Wang

Department of Probability and Statistics
Peking University
P.R.C.

will give a talk

entitled

NEGATIVE CONTROL ANALYSIS AND ITS APPLICATION TO AIR POLLUTION STUDIES

Abstract

Unmeasured confounding often arises in observational studies, and it greatly jeopardizes statistical inference. In this talk, I will present my recent work on using negative controls for mitigation of the confounding problem. We establish a framework that employs negative control variables to improve identification and inference on causal effects in the presence of confounding. Negative control variables are correlated with the unmeasured confounder but do not causally affect primary treatment nor the outcome of interest. Such variables are widely available in socioeconomic, biostatistical, and epidemiological studies. I will give several motivation examples. We show that, with at least two negative control variables, the causal effect is nonparametrically identified, even if the confounder distribution may not be. When only one negative control is available, we develop a strategy to test the null hypothesis of no causal effect. I will further illustrate the negative control analysis with an air pollution example, where we are interested in the effect of PM2.5 on mortality. I will also briefly show some promising extensions in modern data science.

on

Friday, March 31, 2017

(Refreshments will be served from 9:15 a.m. <u>outside Room 301 Run Run Shaw Building</u>)

9:30 a.m. – 10:30 a.m.

at

Room 301, Run Run Shaw Building

<u>**Visitors Please Note**</u> **that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.**

ALL INTERESTED ARE WELCOME