

# ACMS Statistics Seminar

**Guanglei Hong**  
University of Chicago  
Tuesday, October 29, 2019  
101A Crowley Hall  
3:30– 4:30 PM



## **Weighting-Based Sensitivity Analysis for Evaluating the ATT, the ATE, and the Mediated Effects**

Every causal analysis invokes assumptions, some of which can be quite strong (i.e., not always plausible). A sensitivity analysis helps determine whether a causal conclusion could be easily reversed by a plausible violation of a key assumption. However, most sensitivity analysis methods require simplifying assumptions that preclude the handling of complex sources of potential confounding. A new approach to sensitivity analysis, on the basis of weighting, extends and supplements existing weighting methods for identifying the average treatment effect on the treated (ATT), the average treatment effect (ATE), and the natural indirect and direct effects that decompose the total effect of a treatment on an outcome. Under an overarching framework, the discrepancy between a new weight that adjusts for omitted confounders or their proxies and an initial weight that omits them captures the role of the confounders without invoking additional assumptions. This new strategy is appealing for a number of reasons including that, regardless of how complex the data generation functions are, the number of sensitivity parameters remains small and their forms never change. A graphical display of the sensitivity parameter values facilitates a holistic assessment of the dominant potential bias.

The Department of Applied and Computational  
Mathematics and Statistics

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