NYU Stern School of Business
Department of Information, Operations & Management Sciences
INFORMATION SYSTEMS RESEARCH SEMINAR

TOPIC: Estimating Peer Effects With and Without Experiments
SPEAKER: Dean Eckles, Facebook
DATE: Thursday, September 27th
TIME: 4:00 pm – 5:30 pm
PLACE: KMC 3-80

ABSTRACT:

Peer effects can produce clustering of behavior in social networks, but so can homophily and common external causes. It is sometimes possible to conduct randomized experiments to identify peer effects, such as by manipulating or blocking a mechanism by which peer effects occur. We illustrate this with an experiment in social advertising, where we show substantial peer effects via minimal social cues in advertising and examine how these vary with tie strength.

When experimentation is not possible, observational analyses require often implausible ignorability assumptions to identify peer effects. Nonetheless, adjustment and matching estimators may reduce bias enough to be informative, if not unbiased. We use a large experiment that identifies peer effects in information and media sharing on Facebook as a "gold standard" for assessing the bias of observational studies of social contagion. Naive observational estimates hugely overstate peer effects, overestimating average effects by 80% of what is possible. We evaluate propensity score methods and find that a single count measure of prior behaviors closely related to the focal behavior is responsible for the vast majority of the resulting bias reduction; it eliminates over 70% of the bias of the naive estimate, such that remaining bias is less than 4% of the experimental estimate. We additionally examine how this bias reduction varies among the many distinct behaviors included in this study. While these results provide evidence that observational studies can be informative about peer effects, they are cautionary, as many analysts may not have suitable measures of prior closely-related behaviors available.

BIO

Dean Eckles is social scientist, statistician, and member of the Data Science team at Facebook. He investigates how interactive technologies affect human behavior by mediating, amplifying, and directing social influence. His current work uses large field experiments and observational studies. Dean is co-editor of *Mobile Persuasion: 20 Perspectives on the Future of Behavior Change* (2007), a book that examines the growing use of mobile phones to change behaviors in health, consumption, and interpersonal communication. His research appears in peer reviewed proceedings and journals in computer science, marketing, and statistics. Dean holds degrees from Stanford University in philosophy (BA), cognitive science (BS, MS), and statistics (MS), and communication (PhD).