BIOSTATISTICS SEMINAR

Dean Eckles, PhD

Assistant Professor of Marketing
MIT Sloan

Evaluating stochastic seeding strategies in networks

Joint work with Alex Chin & Johan Ugander.

When trying to maximize the adoption of a behavior in a population connected by a social network, it is common to strategize about where in the network to seed the behavior. Some seeding strategies require explicit knowledge of the network, which can be difficult to collect, while other strategies do not require such knowledge but instead rely on non-trivial stochastic ingredients. For example, one such stochastic seeding strategy is to select random network neighbors of random individuals, thus exploiting a version of the friendship paradox, whereby the friend of a random individual is expected to have more friends than a random individual. Empirical evaluations of these strategies have demanded large field experiments designed specifically for this purpose, but these experiments have yielded relatively imprecise estimates of the relative efficacy of these seeding strategies. Here we show both how stochastic seeding strategies can be evaluated using existing data arising from randomized experiments in networks designed for other purposes and how to design much more efficient experiments for this specific evaluation. In particular, we consider contrasts between two common stochastic seeding strategies and analyze nonparametric estimators adapted from policy evaluation or importance sampling. Using simulations on real networks, we show that the proposed estimators and designs can dramatically increase precision while yielding valid inference. We apply our proposed estimators to a field experiment that randomly assigned households to an intensive marketing intervention and a field experiment that randomly assigned students to an anti-bullying intervention.

Thursday September 27, 2018 **3:30 pm - 4:30 pm**
Blue Cross and Blue Shield of North Carolina Foundation Auditorium

UNC GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH