MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

Karl Rohe
University of Wisconsin-Madison

Design and estimation for respondent driven sampling

Tuesday, April 21, 2015
10:20 a.m. - 11:10 am
Refreshments 10:00 am
C405 Wells Hall

Abstract

Respondent driven sampling (RDS) is sampling technique for studying marginalized or hard to reach populations where the study participants refer their friends into the study. To account for the fact that RDS participants are incentivized to refer up to five future participants, this talk models RDS as a Markov chain on a social network that is indexed by a referral tree. Theorem 1 gives a closed form expression for the variance of the popular Volz-Heckathorn estimator. Under reasonable assumptions on the referral tree, the design effect of RDS has a critical threshold that is a function of the referral rate m and the clustering structure in the social network, represented the second eigenvalue of the Markov transition matrix \lambda_2. Below this threshold, the estimator enjoys the standard rate of convergence, above this threshold the rate of convergence is slower and a function of m and \lambda_2. The talk will discuss consequences and potential solutions to this finding.

To request an interpreter or other accommodations for people with disabilities, please call the Department of Statistics and Probability at 517-355-9589.