Department of Statistics

STATISTICS COLLOQUIUM

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A Critical Threshold in Snowball Sampling

MONDAY, May 7, 2018 at 4:30 PM
Eckhart 133, 5734 S. University Avenue
Refreshments before the seminar at 4:00PM in Jones 111

ABSTRACT

In Snowball sampling and Respondent-Driven Sampling, researchers ask participants to refer their friends into the sample. This talk models snowball sampling as a Markov process on a social graph that is indexed by a Galton-Watson tree. Markov dependence decays exponentially in the number of steps (i.e. referrals). However, the Galton-Watson tree (which indexes the dependence) grows exponentially. The first part of the talk discusses the competition between these exponential rates and how they determine a critical threshold. If m is the expected number of referrals provided by each sample and \lambda_2 is the second eigenvalue of the Markov transition matrix, then the rate is determined by whether or not m < 1/\lambda_2^2. The rest of the talk will discuss ways of overcoming that dependence.

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