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Statistical Seminar

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Date: Monday, December 5, 2011

Time: 1:00 p.m.

Room: HH-3026

Title: Estimation With Improved Efficiency in Semi-parametric Linear Longitudinal Models

Abstract:

As opposed to the parametric longitudinal set up, the means of the repeated responses of an individual in semi-parametric linear model consist of a specified regression function in time dependent covariates as well as a time dependent non-parametric function. To obtain efficient regression estimates, one must take the correlations of longitudinal responses into account and this efficiency of the regression estimates may be adversely affected by the use of mis-specified correlation structures. The existing studies estimate the non-parametric function consistently by using the so-called kernel approach, but the specified regression function is estimated by solving a semi-parametric generalized estimating equation (SGEE). A close look at the derivation of the SGEE reveals that this estimating equation has been constructed by using the correct gradient function, but an incorrect covariance or weight matrix which makes SGEE partly standardized. Unlike this partly standardized SGEE (PSSGEE) approach, we now suggest a fully standardized semi-parametric generalized quasi-likelihood (FSSGQL) approach that provides more efficient regression estimates. A simulation study is given to examine this efficiency gain by the FSSGQL approach over the PSSGEE approaches.