University of California, Irvine
Statistics Seminar

Conditional Modeling of Longitudinal Data with Terminal Event

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(Bldg. #314 on campus map)

We consider a random effects model for longitudinal data with the occurrence of an informative terminal event that is subject to right censoring. Existing methods for analyzing such data include the joint modeling approach using latent frailty and the marginal estimating equation approach using inverse probability weighting; in both cases the effect of the terminal event on the response variable is not explicit and thus not easily interpreted. In contrast, we treat the terminal event time as a covariate in a conditional model for the longitudinal data, which provides a straightforward interpretation while keeping the usual relationship of interest between the longitudinally measured response variable and covariates for times that are far from the terminal event. A two-stage semiparametric likelihood-based approach is proposed for estimating the regression parameters; first, the conditional distribution of the right-censored terminal event time given other covariates is estimated and then the likelihood function for the longitudinal event given the terminal event and other regression parameters is maximized. The method is illustrated by numerical simulations and by analyzing medical cost data for patients with end-stage renal disease. This is a joint work with Shengchun Kong and Jack Kalbfleisch.