Nonparametric MLE for Doubly-Censored Data with Frailty

Yu-Ru Su
Department of Statistics,
University of California, Davis

Abstract

The classical proportional hazards model encounters difficulties when the independent assumption among subjects is violated, e.g. when familial data are observed. A frailty variable is often included to account for the associations of event-times within a family. In this talk, we study such a class of frailty models for data that are subject to double censoring as defined in Turnbull (1974). We developed the estimating procedure through the likelihood approach and the associate large sample theory for both the parametric and nonparametric estimates. The parametric estimates are shown to be semi-parametrically efficient as well. A modified EM algorithm is proposed to resolve the challenges in the EM-algorithm and shown numerically to perform satisfactorily. The new procedure is applied to a study of Hepatitis B virus infection.