

Varying-coefficient model for the occurrence rate function of recurrent events

Chin-Tsang Chiang · Mei-Cheng Wang

Received: 13 June 2006 / Revised: 2 October 2006 / Published online: 25 April 2007
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Abstract This article mainly considers the recurrent event process with independent censoring mechanism through a more flexible varying-coefficient model. The smoothing estimators for the varying-coefficient functions are also proposed via maximizing the kernel weight version of the log-partial likelihood function with respect to the coefficients at each time point. For the selection of appropriate bandwidths and the construction of confidence intervals, the consistent empirical smoothing estimators for the covariance functions of the estimators and a bias correction method are considered. As for the baseline effect function of recurrent events in the population, two different smoothing estimation methods are suggested and investigated. In this study, the asymptotic properties of the proposed smoothing estimators are derived. The finite sample properties of our methods are examined through a Monte Carlo simulation. Moreover, the procedures are applied to a recurrent sample of AIDS link to intravenous experiences (ALIVE) cohort study.

Keywords Independent censoring · Kernel · Partial likelihood function · Rate function · Recurrent event · Smoothing estimator · Varying-coefficient model