



Empirical likelihood MLE for joint modeling right censored survival data with longitudinal covariates

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Abstract

Up to now, almost all existing methods for joint modeling survival data and longitudinal data rely on parametric/semiparametric assumptions on longitudinal covariate process, and the resulting inferences critically depend on the validity of these assumptions that are difficult to verify in practice. The kernel method-based procedures rely on choices of kernel function and bandwidth, and none of the existing methods provides estimate for the baseline distribution in proportional hazards model. This article proposes a proportional hazards model for joint modeling right censored survival data and intensive longitudinal data taking into account of within-subject historic change patterns. Without any parametric/semiparametric assumptions or use of kernel method, we derive empirical likelihood-based maximum likelihood estimators and partial likelihood estimators for the regression parameter and the baseline distribution function. We develop stable computing algorithms and present some simulation results. Analyses of real dataset are conducted for smoking cessation data and liver disease data.

Keywords Empirical likelihood · Intensive longitudinal data · Maximum likelihood estimator · Proportional hazards model · Right censored data

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