Semiparametric likelihood ratio confidence intervals for survival probabilities

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Right censoring is a kind of incompleteness prevalent among time-to-event data, complicating point and interval estimation of survival probabilities. For right censored data, nonparametric likelihood ratio confidence intervals for a survival probability can be based on the asymptotically efficient Kaplan—Meier estimator. In this talk, however, the focus will be on an alternative likelihood ratio procedure that employs a semiparametric survival function estimator, which performs better than the Kaplan—Meier estimator when a model for a conditional probability is correctly specified. In the absence of misspecification, the semiparametric likelihood ratio procedure that we propose will be shown to produce confidence intervals with correct empirical coverage, but which are tighter than the ones based on the Kaplan—Meier estimator.

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