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Asymptotic representation of presmoothed Kaplan-Meier integrals with covariates in a semiparametric censorship model

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Abstract

Presmoothed Kaplan-Meier integrals have been proposed as suitable estimators in semiparametric censorship models. They are based on a modification of Kaplan-Meier weights which replaces the censoring indicators by some smooth (parametric) fit to the conditional probability of uncensoring, leading to estimators with smaller variance. In this paper an asymptotic representation of these estimators as a sum of i.i.d. random variables is established. The situation in which covariates are present is considered; therefore, the present paper extends previous results in Dikta et al. (2005) to the setting with covariates. As a consequence, a CLT for presmoothed Kaplan-Meier integrals with covariates is obtained. Application to censored regression is given. The finite sample performance of the estimator is investigated through simulations.

1 Introduction

In Survival Analysis and other fields, the variable of interest Y is a lifetime which is observed under right-censoring. Therefore, rather than Y one observes (Z, δ),