Partial Linear Transformation Models for Censored Survival Data

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Abstract: We propose a class of partially linear transformation models, which extends linear transformation models by allowing flexible estimation of covariate effects semiparametrically. A local estimating equation approach, motivated by martingale representation, is proposed for estimating parametric and nonparametric covariates effects in a unified manner. In particular, a locally weighted polynomial regression is used to estimate the nonparametric component. We show that, with a proper choice of the kernel bandwidth parameter, the resulting estimators for the finite-dimensional regression parameters are root-n consistent and asymptotically normal. Furthermore, a new resampling method is developed for estimating the asymptotic variances of the estimators. Numerical studies are conducted to evaluate the finite-sample performance of the proposed estimators.