



Semiparametric Additive Transformation Model under Current Status Data

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We consider the efficient estimation of the semiparametric additive transformation model with current status data. A wide range of survival models and econometric models can be incorporated into this general transformation framework. We apply the B-spline approach to simultaneously estimate the linear regression vector, the nondecreasing transformation function, and a set of nonparametric regression functions. We show that the parametric estimate is semiparametric efficient in the presence of multiple nonparametric nuisance functions. An explicit consistent B-spline estimate of the asymptotic variance is also provided. All nonparametric estimates are smooth, and shown to be uniformly consistent and have faster than cubic rate of convergence. Interestingly, we observe the convergence rate interfere phenomenon, i.e., the convergence rates of B-spline estimators are all slowed down to equal the slowest one. The constrained optimization is not required in our implementation. Numerical results are used to illustrate the finite sample performance of the proposed estimators.

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