ESTIMATION OF A SMOOTH QUANTILE FUNCTION UNDER THE PROPORTIONAL HAZARDS MODEL

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Abstract. The problem of estimating a smooth quantile function, $Q(\cdot)$, at a fixed point p, $0 < p < 1$, is treated under a nonparametric smoothness condition on Q. The asymptotic relative deficiency of the sample quantile based on the maximum likelihood estimate of the survival function under the proportional hazards model with respect to kernel type estimators of the quantile is evaluated. The comparison is based on the mean square errors of the estimators. It is shown that the relative deficiency tends to infinity as the sample size, n, tends to infinity.

Key words and phrases: Relative deficiency, mean square error, kernel type estimators, quantile function, right censored data, proportional hazards model.