NONPARAMETRIC REGRESSION WITH CURRENT STATUS DATA

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Abstract.   We apply nonparametric regression to current status data, which often arises in survival analysis and reliability analysis. While no parametric assumption on the distributions has been imposed, most authors have employed parametric models like linear models to measure the covariate effects on failure times in regression analysis with current status data. We construct a nonparametric estimator of the regression function by modifying the maximum rank correlation (MRC) estimator. Our estimator can deal with the cases where the other estimators do not work. We present the asymptotic bias and the asymptotic distribution of the estimator by adapting a result on equicontinuity of degenerate U-processes to the setup of this paper.

Key words and phrases: Current status data, case 1 interval censoring, survival analysis, nonparametric regression, maximum rank correlation estimator, local linear regression, asymptotic properties, degenerate U-processes, VC-subgragh class, equicontinuity.