ROSS PRENTICE, Fred Hutchison Cancer Research Center

Nonparametric and Semiparametric Analysis of Bivariate Failure Time Data

The nonparametric maximum likelihood estimation problem is re-defined to entail maximization over marginal hazard rates, and over double failure hazard rates at all grid points formed by uncensored times where there is a possibility of double failure given preceding data. The resulting unique NPMLE can be calculated using a two-step procedure. The fist involves setting aside all doubly censored observations that are interior to the risk region, leading to a Dabrowska-type NPMLE from the remaining data. A corresponding NPMLE arises also for the censoring 'survivor' function. The second brings in the omitted data using self-consistency, yielding non-iterative NPMLEs for both the failure and censoring distribution functions. Simulation studies demonstrate modest efficiency improvements. Regression generalizations will be briefly mentioned.