1023-62-676 **Kirsten Doehler*** (kadoehle@uncg.edu), University of North Carolina Greensboro, Department of Mathematics and Statistics, 383 Bryan Building, Greensboro, NC 27402, and **Marie Davidian**, North Carolina State University, Department of Statistics, Campus Box 8203, Raleigh, NC 27695.
Smooth Inference for Survival Functions with Arbitrarily Censored Data.

Survival functions illustrate the survival probability over time. Traditionally, methods used to estimate survival functions are nonparametric, and hence impose no assumptions on the true survival distribution. We have proposed a new procedure for estimation of survival functions that allows a unified approach to handling different kinds of censoring. Our approach is based on the premise that, if one is willing to make mild smoothness assumptions on the underlying true survival distribution, efficiency gains and computational advantages over nonparametric methods may be possible. The approach assumes that the survival distribution has a "smooth" density, which is approximated by the so-called seminonparametric (SNP) density. The SNP has a flexible "parametric" representation which allows it to capture arbitrary shapes. A description of the approach and its implementation is given, along with simulation results which validate its performance against that of corresponding nonparametric survival curves. We also develop a test statistic where each survival curve is estimated from application of the SNP density. (Received September 20, 2006)