

The Lipschitz condition in the expansion of weighted empirical log-likelihood ratio *

JIAN-JIAN REN †

Abstract

So far, there has not been any work on likelihood-based interval estimates with partly interval-censored data. In this article, we derive the high-order expansion of the weighted empirical log-likelihood ratio for survival probabilities with right censored data, doubly censored data and partly interval-censored data, and we show that if the Lipschitz condition is satisfied for the distribution of the leading term(s) of this expansion, the *theoretical coverage accuracy equation* for the weighted empirical likelihood ratio confidence intervals (WELRCI) can be obtained. When there is no censoring, such Lipschitz condition is established in an example where smoothing based on the kernel density method is used. Simulation results show that WELRCI for survival probabilities compare well with those empirical likelihood-based methods and other alternative methods.

*This research was partially supported by NSF Grants DMS-0204182 and DMS-0604488.

Received: March 8, 2006; *Accepted:* July 7, 2006.

Key words and phrases: Bootstrap; doubly censored data; weighted empirical likelihood; interval censored data; partly interval-censored data; right censored data.

AMS 2000 subject classifications. Primary 62F25; secondary 60F10.

†*Mailing Address:* Department of Mathematics, University of Central Florida, Orlando, FL 32816.
E-mail: jren@mail.ucf.edu.