The Proportional Odds Model for Multivariate Interval-Censored Failure Time Data

Man-Hua Chen
Department of Statistics, University of Missouri, 146 Middlebush Hall, Columbia, MO 65211, U.S.A.

Xingwei Tong
School of Mathematical Sciences, Beijing Normal University, Beijing, P.R. China 100875

Jianguo Sun
Department of Statistics, University of Missouri, 146 Middlebush Hall, Columbia, MO 65211, U.S.A.

The proportional odds model is one of the most commonly used regression models in failure time data analysis and has been discussed by many authors (Bennett, 1983; Chen, 2001; Huang and Rossini, 1997; Rabinowita et al., 2000; Yang and Prentice, 1999). It specifies that the covariate effect is a multiplicative factor on the baseline odds function and is often used when, for example, the covariate effect diminishes over time. Most of the existing methods for the model are for univariate failure time data. In this paper, we discuss how to fit the proportional odds model to multivariate interval-censored failure time data. For inference, a maximum likelihood approach is developed and evaluated by simulation studies, which suggest that the method works well for practical situations. The method is applied to a set of bivariate interval-censored data arising from an AIDS clinical trial.

[Man-Hua Chen, 4710 W Knox Dr. Columbia, MO65203, USA; manhua50@hotmail.com]