Empirical likelihood based inference for the calibration regression model with lifetime medical cost

Yichuan Zhao

Department of Mathematics and Statistics, Georgia State University

E-Mail: matyiz@langate.gsu.edu

Abstract: In recent years, medical cost has received increasing interest in Biostatistics and public health. Statistical analysis and inference of lifetime medical cost have been challenging by the fact that the survival times are censored on some study subjects and their subsequent cost are unknown. Recently, the calibration regression model has been proposed to study the medical cost associated with covariates. However, the accuracy of the inference procedure may be low when the sample size is small due to highly skewed nature of the medical cost and non-uniform rate of cost accumulation over time. In this paper, we develop an empirical likelihood ratio method for the calibration regression model. The adjusted empirical likelihood confidence regions are constructed for the regression parameters accordingly. Furthermore, we compare the proposed empirical likelihood method with normal approximation based method. Simulation results show that the proposed method outperforms the existing method in terms of coverage probability. In particular, the proposed adjusted empirical likelihood method overcomes the under coverage problem.