Accepted Manuscript

Analysis of long series of longitudinal ordinal data using marginalized models

Keunbaik Lee, Insuk Sohn, Donguk Kim

PII: S0167-9473(15)00167-X
DOI: http://dx.doi.org/10.1016/j.csda.2015.07.010
Reference: COMSTA 6117

To appear in: *Computational Statistics and Data Analysis*

Received date: 24 December 2012
Revised date: 5 April 2015
Accepted date: 23 July 2015

Please cite this article as: Lee, K., Sohn, I., Kim, D., Analysis of long series of longitudinal ordinal data using marginalized models. *Computational Statistics and Data Analysis* (2015), http://dx.doi.org/10.1016/j.csda.2015.07.010

Analysis of Long Series of Longitudinal Ordinal Data Using Marginalized Models

Keunbaik Lee,[1,*] **Insuk Sohn**[2] **and Donguk Kim**[1]

[1]Department of Statistics, Sungkyunkwan University, Seoul, 110-745, Korea

[2]Center for Biostatistics and Clinical Epidemiology, Samsung Medical Center, Seoul, Korea

April 5, 2015

SUMMARY. Marginalized models (Heagerty, 1999; 2002) are often used for short longitudinal series when population averaged effects are of interest. Lee and Daniels (2007, 2008) proposed marginalized models for the analysis of longitudinal ordinal data to permit likelihood-based estimation of marginal mean parameters. In this paper, we extend their work to accommodate the response dependence that we have seen with long series of response data (the functional form of response dependence has both serial and long-range components). Maximum likelihood estimation is proposed utilizing the Quasi-Newton algorithm with a Quasi Monte Carlo method for integration of the random effects. The methods are illustrated on quality of life data from a recent lung cancer clinical trial.

Keywords:likelihood-based estimation; Quasi-Newton; quality of life.

* *email:* keunbaik@skku.edu