

Analysis of Multivariate Longitudinal Data with Censored and Intermittent Missing Responses

WAN-LUN WANG

E-mail: wlunwang@fcu.edu.tw

Abstract: The multivariate linear mixed model (MLMM) has emerged as an important analytical tool for longitudinal data with multiple outcomes. However, the analysis of multivariate longitudinal data could be complicated by the presence of censored measurements because of a detection limit of the assay in combination with unavoidable missing values arising when subjects miss some of their scheduled visits intermittently. This paper presents a generalization of the MLMM approach, called the MLMM-CM, for a joint analysis of the multivariate longitudinal data with censored and intermittent missing responses. A computationally feasible expectation maximization-based procedure is developed to carry out maximum likelihood estimation within the MLMM-CM framework. Moreover, the asymptotic standard errors of fixed effects are explicitly obtained via the information-based method. The proposed methodology is demonstrated through a simulation and a case study from an AIDS clinical trial. Experimental results reveal that our method is able to provide more satisfactory performance as compared with the traditional MLMM approach.