

A New Inference Approach for Joint Models of Longitudinal Data with Informative Observation and Censoring Times

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Abstract: For the analysis of longitudinal data, Liang, Lu and Ying (2009, Biometrics **65**, 377-384) proposed a novel joint model to capture the relation between the longitudinal response process and the observation times through latent variables and developed an estimation procedure under the assumptions that the distributions of the latent variables are specified and the censoring times are noninformative, which may not be true in practice. In this article, we propose a new estimation procedure for their model where these assumptions are not required anymore. Estimating equation approaches are developed for parameter estimation, and the resulting estimators are shown to be consistent and asymptotically normal. In addition, some procedures are presented for model selection and model checking. Simulation studies demonstrate that the proposed method performs well and an application to a bladder cancer study is provided.

Key words and phrases: Estimating equations; Informative observation and censoring times; Joint modeling; Latent variables; Longitudinal data; Model selection.