Marginalized Regression Models for Longitudinal Categorical Data

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Abstract

Generalized linear models with serial dependence are often used for short longitudinal series. Heagerty(1999,2002) has proposed marginalized regression models for the analysis of longitudinal binary data. The focus of this talk is on marginalized regression models for longitudinal ordinal response data. We first discuss marginalized transition models for the analysis of longitudinal ordinal data to permit likelihood-based estimation of marginal regression parameters. The interpretation of regression coefficients is invariant to specification of the dependence in this model, unlike in conditional models. In addition, estimation of covariate effects is robust to mis-specification of dependence. Next, we describe marginalized random effects models for longitudinal ordinal data. The serial dependence is captured by random effects. The interpretation of regression coefficients is also invariant to specification of the dependence in this model. Fisher-scoring and Quasi-Newton algorithms are developed for estimation. Methods are illustrated on quality of life data from a recent colorectal cancer clinical trial.