

Bayesian Analysis for Ordinal and Mixture of Ordinal and Continuous Repeated Measures

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Abstract:

Hierarchical model specifications using latent variables are frequently used to reflect correlation structure in data. Motivated by the structure of a Bayesian multivariate probit model, we demonstrate two Metropolis-Hastings algorithms for sampling from the posterior distribution of a correlation matrix. One of our methods have the advantage that each proposed step is a proper correlation matrix. Our sampling algorithms lead directly to two readily interpretable families of prior distributions for a correlation matrix. The methodology is illustrated through a simulated example, a simulation study and through an application with repeated binary outcomes on individuals from a study of a suicide prevention intervention. We also extend the methodology to analyze mixture of ordinal and continuous repeated measures with an application to data from the UCLA Brain Injury Research Center.