

# Application of a Mixture Logistic Regression Model with Random Effects

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## Abstract

The performance of a mixture logistic regression model with random effects is investigated. The model represents an extension of a random effects logistic regression to account for latent subgroups across which the mean effects of predictor variables vary. A Markov chain Monte Carlo algorithm along the lines of Lenk and DeSarbo (2000) is illustrated for estimating model parameters and determining the number of mixture components.

An application to data from a nicotine dependence study is presented. The relative importance of various predictors of cigarette smoking is studied among habitual smokers prior to a quit attempt. The usefulness of a mixture representation of smoker differences is illustrated through its prediction of the overall success, time to relapse, and other characteristics of the quit attempt.

## Reference

Lenk, P.J., & DeSarbo, W.S. (2000). Bayesian inference for finite mixtures of generalized linear models with random effects. *Psychometrika*, *65*, 93–119.