

# CAPTURING CORRELATED CLUSTERS USING MIXTURES OF LATENT CLASS MODELS

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**ABSTRACT:** Latent class models rely on the conditional independence assumption, i.e., it is assumed that the categorical variables are independent given the cluster memberships. Within the Bayesian framework, we propose a suitable specification of priors for the latent class model to identify the clusters in multivariate categorical data where the independence assumption is not fulfilled. Each cluster distribution is approximated by a latent class model, leading overall to a two-layer mixture of latent class models. By carefully specifying the priors on the model parameters, the Bayesian approach allows to identify the clusters and fit their cluster distributions using MCMC sampling. We provide suitable estimation and inference methods for the mixture of latent class models and illustrate the performance of this approach on a real data set containing patients suffering from one of three types of low back pain.

**KEYWORDS:** Bayesian inference, model-based clustering, prior on the number of components, telescoping sampler

## References

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