Longitudinal Mixed-Membership Models for Survey Data on Disability

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Abstract

We describe a new family of models to analyze longitudinal data by combining features from a version of the cross-sectional Grade of Membership Model and from the longitudinal Multivariate Latent Trajectory Model. These models assume the existence of a small number of typical or extreme classes of individuals and model their evolution over time. We regard individuals as belonging to all of these classes in different degree, by considering them as convex weighted combinations of the extreme classes. In this way, we are able to describe distinct general tendencies (the extreme cases) while accounting for the individual variability. We propose a full Bayesian specification and estimation methods based on Markov Chain Monte Carlo sampling.

We apply our method to data the National Long Term Care Survey (NLTCS), a longitudinal survey with six completed waves aimed to assess the state and characteristics of disability among U.S. citizens age 65 and above. A simple extension of our methods allows us to answer some relevant questions about the changes in disability across generations.

(Joint work with Daniel Mamrique-Vallier)