

LATENT TRANSITION REGRESSION FOR LONGITUDINAL DISABILITY DATA: EMERGING SOLUTIONS TO DIFFICULT ANALYTIC PROBLEMS

Diana L. Miglioretti

Quantifying chronic back pain poses significant analytic challenges. Due to the lack of an obvious single measure, multiple outcomes of varied types (*e.g.*, continuous and categorical) are typically collected including measures of pain intensity, interference with activities, and work disability. Some of these measures may only apply to a subset of patients. For instance, work disability is not defined for retired persons or homemakers. Statistical analyses are further complicated when these outcomes are measured repeatedly through time. In this talk, I will introduce a Bayesian latent transition regression approach for studying the dependence of such mixed longitudinal responses on covariates. The outcome of interest (pain severity) is treated as a categorical latent variable, and the observed mixed responses are treated as surrogates, measured with error. The proposed approach directly models the relationship between pain severity and covariates over time. The model accommodates a mixture of outcomes from any distribution and outcomes measured only on subsets of individuals (*e.g.*, work disability). The method will be exemplified with a study of chronic back pain, for which pain severity is measured with a mixture of binary responses, count data, and skewed continuous data.