Martedì 1 ottobre 2013 Ore 14.00

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Three-step estimation of latent Markov models: an application to nursing homes evaluation

We propose a modifed version of the three-step estimation method for the latent class model with covariates, which may be used to estimate the latent Markov (LM) models. The three-step estimation approach we propose is based on a preliminary clustering of subjects on the basis of the time specific responses only, and it represents an useful estimation tool for complex models. We illustrate this approach through an application finalized to the study of the health status of elderly people hosted in Italian nursing homes. This application is based on an LM model which accounts for informative missing responses and dropout due to the death of a patient. In the analysis of this dataset, which is also characterized by a large number of response variables and covariates, we found the proposed three-step approach more stable with respect to the standard maximum likelihood method.

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