Academic Year	2021-2022
Subject	Finite Mixture Models in Health Economics: theory and applications
Instructor	Paolo Li Donni
Course description	Many empirical analyses in health economics use as dependent variable a count variable (e.g. health-care services use, number of drug prescriptions) or discrete binary or categorical variable (e.g. insurance coverage, subjective health status). A widely employed approach to model unobserved factors relies on finite mixture model or latent class model. In the finite mixture formulation of unobserved heterogeneity, the latent classes are assumed to be based on the individual's latent long-term health status or preferences towards utilization, which may not be well captured by proxy. This course is intended as both a theoretical and practical introduction to finite mixture modelling. To introduce mixture modelling principles, we will begin with finite mixtures of distributions and then move to the analysis of multiple frequency tables. More complex models for both cross sectional and longitudinal data are also introduced. Along the way, we will cover: model construction and specification, graphical representations of models, maximum likelihood estimation via the expectation-maximization algorithm, data-model fit, and model comparisons. Practical analysis will be done by a series of code in Matlab and/or R.
Learning Objectives	Students completing this course should be able to: • Understanding and interpreting latent classes across different contexts in health economics • Setup and estimate a finite mixture model • Apply insights from economics theory to understand policy relevant issue in the health care markets
Suggested readings	• McLachlan, G. J. and Peel, D. (2000). Finite Mixture Models. Wiley Series in Probability and Statistics: Applied Probability and Statistics. John Wiley & Sons, New York. • Hagenaars, Jacques A., and Allan L. McCutcheon, (2002) Applied latent class analysis. Cambridge University Press. • Research papers shared during the course
Course Activity (hrs)	10
Credits	2.5
Assessment Method	Report and a presentation on a scientific paper and/or a dataset as agreed with the instructor.
Teaching Methods	Class and computer lab (learning by doing)
Calendar	Sept/Nov 2022
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