# LATENT TRAJECTORY MODELLING OF MULTIPLE BINARY DATA

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Latent trajectory analysis is a form of latent class analysis, where the manifest variables are longitudinal measurements of a single outcome. The latent classes may then correspond to either constant, increasing or decreasing levels of the outcome over time, and describe different severity or course of a disease. Where multiple outcomes are available, including these in the model may allow more accurate estimation of the classes, and for classes to be defined by the relationship between outcomes, for example absence of a symptom. Two models are described for multiple binary outcomes observed at each time point: (1) a latent class model where all outcomes are considered independent at all time points, and (2) a latent class model incorporating a random effect to model the heterogeneity between subjects. The relationship of the class probabilities to covariates is modelled using a logistic function. The methods are applied to data on asthma and allergy symptoms in infants, with symptoms recorded at 7 time points.