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A Sequential Mover-Stayer Model for Recurrent Events with “Burn-out”

Patients with affective disorder experience repeated exacerbations but some researchers in psychiatry think this process may “burn-out” after which patients will not experience any new exacerbations. We describe a sequential mover-stayer process to model such recurrent events. “Movers” follow a continuous-time multistate Markov model with non-zero transition intensity. When an individual becomes a “stayer” they enter a subject-specific absorbing state and hence acquire a null transition intensity. An EM algorithm is developed to estimate the parameters for the dynamic mover-stayer process as well as the transition intensities for the hidden Markov model.