

The mover stayer model

The mover stayer model is a statistical modelling approach used to analyze longitudinal data specially to identify and characterize different patterns of behavior or trajectories within a population over time.

-> It is often employed in the field of social sciences, such as psychology and sociology to understand individual differences in stability versus change.

-> the mover stayer model assumes that individual within a population can be classified into 2 distinct groups:

1) movers and 2) stayer

Movers are individuals whose behavior or characteristics change significantly over time; while stayers are individuals who remain relatively stable in their behavior

-> the model aims to estimate the population of movers and stayers in the population and to identify the specific trajectories associated with each group

-> in the mover stayer model, each individual is assigned a latent class membership indicating whether they belong to the mover or stayer group the membership is modelled using a binary indicator variable, where 1 represents the mover group and 0 represents stayer group

- the model estimates the probabilities of transitioning between latent class membership at each point of time capturing the probabilities of moving from stayer group to the mover group or vice versa these transition probs are often represented using transition matrices

-the mover stayer model can provide valuable insights into the heterogeneity of trajectories within a population and the factors associated with different patterns of behavior.

-it allows researchers to understand the proportions of individuals who exhibit stability versus change, the timing of transition between groups and the characteristics associated with each group.

Application of markov chain and mover-stayer model to model to modeling repayment behaviour of bank loan grantees

The application of markov chain and mover stayer model to model the repayment behaviour of bank loans grantees can provide valuable insights into the dynamics and patterns of loan repayment. Here's how the models can be utilized in this context

1 markov chain : a markov chain can be employed to model the transition probabilities of loan repayment behaviour over time. In this case, the states of the Markov chain represents different repayment statuses such as 'current' 'delinquent', 'defaulted' or 'repaid'

The transition probabilities between these states capture the likelihood of moving from one repayment status to another within a given time period.

The historical data on loan repayment behavior can be used to estimate the transition probabilities for instance, the data might reveal that borrowers who are currently delinquent have a higher prob of transitioning to default than transitioning back to a current status. These transition probs can be used to project future repayment behavior and asses the rush associated with different loan portfolios.

2 the mover-stayer model: the mover stayer model can complement the Markov chain by identifying distinct groups of loan grantees based on their repayment behavior patterns, the model can partition the grantees up to 2 latent classes: movers and stayers

- movers are grantees who exhibit significant changes in their repayment behavior over time; while stayers are grantees who maintain relatively stable repayment behavior the proportions of movers and stayers can be estimated using statistical techniques, such as maximum likelihood estimation or Bayesian methods, based on the observed loan repayment data.

By employing the mover stayer model, you can gain insights into the characteristics and factors associated with different trajectories

For e.g., you might find that borrowers who experience positive changes in their financial circumstances or receive additional support more likely to transition from the mover to the stayer group.

The combination of a Markov chain and mover stayer model allows for a comprehensive analysis of loan repayment behavior. The Markov chain captures the overall dynamics and probabilities of transitioning between different repayment statuses, while then mover stayer model identifies distinct groups and characteristics their unique repayment patterns

- this modeling approach can help banks financial institutions assess credit risks, develop targeted strategies for borrower support or intervention and make informed decisions regarding loan portfolio management and risk mitigation