

The problem of creating dynamic fare model consists of two tasks - estimating demand for train tickets and multistage optimization of price of fare. We introduce a model of inhomogeneous Markov process for the process of selling the tickets in this thesis. Because of the complexity of the state space the optimization problem needs to be solved using simulation methods. The solution was implemented in R language for single-stage and two-stage problems. Before this application we summarize the theory of inhomogeneous Markov process with special attention to process with separable inhomogeneity. Then we propose methods for estimating the intensity using maximum likelihood theory. We also describe and compare two algorithms for simulated optimization.