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## Simulation of suburban migration: driving forces, socio-economic characteristics, migration behaviour and resulting land-use patterns

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### Abstract

Land-use transitions in metropolitan areas have a high impact on environment and appear as pressures on the inhabitants' living conditions. Tools are needed to support planning decisions to overcome or at least mitigate those pressures. Simulation models are such tools, generating land-use change scenarios that help to examine effects of planning strategies. This article introduces a model that establishes a multiagent system approach to achieve results for changes in land-use and migration patterns with high spatial accuracy. Details of suburban migration behaviour modelling are described with emphasis on the definition of socio-economic classes, on the detection of driving forces triggering suburban migration and on migration behaviour aspects with respect to those socio-economic classes. The model concept is presented as well as results of retrospective simulation runs for a 30-year time range that are compared with the observations of the simulation target year in order to examine the model's validity. Future scenario runs show different urban sprawl trends with either restricted or unlimited residential area zoning and higher versus lower target residential density regulations. A remarkable decrease of suburban sprawl can be achieved by applying the right planning measures, even if the numbers of migrating households remain the same.

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