**Chapter**

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# Simulating Synthetic Life Courses of Individuals and Couples, and Mate Matching

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## Abstract

We present a novel microsimulation approach which is enriched by elements from agent-based modeling. Concretely, we have designed a simulation model and software which facilitate describing and simulating life courses of individuals and couples and conducting mate matching. To define individual and couple behavior we use a continuous-time multi-state model, that is, we use a continuous-time microsimulation model. For mate matching we apply agent-based modeling: first, to each individual who is seeking for a partner a random value is assigned that captures his or her aspiration level regarding the fit with a potential partner. Then, via an empirical likelihood equation we assess the probability that a given woman and a given man would mate. Thereafter, we simulate a decision making process whether two individuals form a couple applying individual aspiration levels and their mating probability. Our description puts into perspective the differences between microsimulation and agent-based modeling, their relative strength, and limitations. We use the ml-DEVS formalism to specify the novel simulation approach and the modeling and simulation framework JAMES II to implement it. Projecting a hypothesized population based on the population of the Netherlands serves to illustrate its potential.

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