In this thesis a microscopic model of travel demand is developed. For each person of a synthetic population the trips of a typical working day are simulated, *i.e.* the aspects of the trip like departure time, origin, destination, and mode are determined. The model relies on an activity-based approach, where time allocation is derived from empirical data. To do this, diary data of a time budget survey of the Federal Statistical Office 1991/1992 are subject to a cluster analyis. For each episode (period of time, continuously dedicated to one activity) parameters for the variability of starting time and duration are derived.

The time-use patterns are assigned to the individuals of the synthetic population according to socio-demographic characteristics. The destinations of the trips are chosen using the concept of intervening opportunies, depending on travel times. The travel mode depends on the type of person, the purpose of the trip, and the distance. It is made sure, that each car of a household is only used for one tour at a given point in time. As destination choice and mode choice are responsive to the travel times in the network, a feed-back loop with a traffic simulation model is established. The traffic simulation model itself is not part of the thesis. The model is applied to the City of Cologne as a test case. Characteristic quantities of travel demand are compared to empirical findings.