Mario Cools, Elke Moons, Geert Wets
email:{mario.cools,elke.moons,geert.wets@uhasselt.be}
tel.: +32(0)11 26 91 {31,26,58}

Transportation Research Institute, Hasselt University
Campus Diepenbeek, Wetenschapspark 5 bus 6, 3590 Diepenbeek, Belgium

An activity-based approach for surveying and modelling travel behaviour: Analysis of the mixed-mode design-effects

Abstract

Reports from various international organisations, like for instance the European Commission's White paper "European transport policy for 2010: time to decide" show that policy makers acknowledge the increasing importance of mobility. Mobility is not just considered to be a cornerstone for economic growth, but also seen as a social need that offers people the opportunity for self-fulfilment and relaxation.

In order to lead an efficient policy, governments require reliable predictions of travel behaviour, traffic performance, and traffic safety. Thus, traffic and transportation models can provide the right framework to support long-term decisions. On an international level, activity-based models have become one of the leading paradigms to model travel behaviour. The most important characteristic of these models is that travel is considered as a derivative from the activities that individuals and households need or wish to perform. This means that travel is no longer seen as an isolated fact in these models, which is a great advantage in comparison to the classic models.

The development of activity-based models requires very specific data. Since a special emphasis was laid on the dynamic character of the model, both the planned and executed activities were surveyed. 2500 households were selected using a stratified cluster technique. The selected household were asked to fill out an activity-diary and to report rescheduling decisions during a one-week period. Approximately one half of the households received a PDA-module; the other half was surveyed by means of a traditional paper-and-pencil diary.

Although both data collection modes were designed in such way that the correspondence of the questions was optimised, it remains essential to identify differences in the data that are introduced by using multiple modes. This paper starts with describing the differences that existed in the questionnaire design of the two modes, and then further explores the statistical differences in terms of some key observations, such as average number of trips reported, and average travel time.