Activity and tour travel behaviour: Evidence from Great Britain National Travel Survey

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Abstract
The activity-based approach to travel demand forecasting has been proposed within the field of travel behaviour because of its ability to model the derived nature of travel demand (Jones et al. 1983, Axhausen 1990; Kitamura et al. 1993, Bhat and Koppelman 1993; Ettema et al. 1995). The success of the activity-based forecasting system depends heavily on the behavioural models used to predict a person's daily activities and the scheduling process. Activity-based demand generation constructs complete all-day activity plans producing a series of stops for each member of a population. Recently, conventional travel diaries have been used as a source of data to model trip chains and out-of-home activity schedules of individuals (Miller et al. 2003; Roorda et al.; 2007) in activity-based demand modelling. These prototype models suggest to be well-practical in applying in areas where activity data may not be available. Therefore, daily trips of individuals recorded in travel diaries can be a reasonable proxies for out-of-home activities of individuals and households since they were recorded as sequences of characters representing out-of-home activity chains and their contexts during the day.

Due to the difficulty in establishing and analysing all of the possible trip chain types, the majority of developed model of trip chaining has appeared to focus on work travel only. However, work related travel mainly does not represent the majority of out-of-home activities undertaken and, for some life cycle groups, does not represent any travel at all. This study firstly, aims to better understand travel patterns of Great Britain individual groups, considering wide range of out-of-home activities, through detailed analysis of trip chaining behaviour defining the tour, a trip chain which starts and ends to home, as the unit of travel and then to identify the variation of trip chaining behaviour between and within defined individual groups and finally, looking at out-of-home activity sets within each population group to examine whether there are stability in frequency and duration of some of the core activities (i.e. shopping, social, and recreational activities).

The Great Britain National Travel Survey (NTS), as a one week out-of-home activity dataset, can be considered to be the result of household and individual decision making in undertaking out-of-home activities and their scheduling. This database was transferred from a trip data base to a tour data base. Previous results (Khorgami, 2008) on tour travel behaviour have shown complicated and varied patterns of tours within population groups and this revealed the need for more investigation in set of whole week out-of-home activities of individuals. It was decided to go one step back and look at out-of-home activity sets of individual groups to better understand how different types of tours in each of the defined groups are formed and to find what different type of out-of-home activities they take part over a defined period of time (weekdays, weekend) and whether there is any stability in frequency and duration of activities within defined individual groups. Through these results, it can be understood whether the different activity sets of individual groups create varied trip chaining behaviour of travel within population groups or there are other factors which produce different type of out-of-home activity scheduling within that group. Moreover, results of this study help policy makers and modellers to recognize and understand how individual groups generate their activity sets in a defined period of time (day/week) within temporal and spatial constraints.