ICT and social interaction: Modeling communication mode choice and its effect on travel behavior

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Abstract
The widespread use of new information and communication technologies (ICT's), such as the Internet and mobile phones has provided new ways of communicating and is therefore likely to affect the way in which people interact with each other. This in turn may have an effect on individual's social activity-travel decisions. It is therefore not surprising that international research on travel demand analysis has recently started to focus more on the effects of ICT on activity travel patterns. Possible effects of ICT on travel for social interaction are substitution, generation or complementarity, modification or neutrality (Salomon, 1986; Mokhtarian, 1990; Graham & Marvin, 1996). Although the relationship between ICT and travel patterns has received a substantial amount of attention in recent literature on travel behavior, not many studies focus on the effect of ICT on travel for social activities (Mokhtarian, Salomon & Handy, 2006). However, social activities, such as visiting relatives and friends, are responsible for an important portion of trips conducted by individuals.

This study therefore takes social interactions (with one person) as a starting point to analyze the relationship between ICT use and travel for social interaction. The analyses are based on data collected in 2008 in the Eindhoven region in the Netherlands among 747 respondents. The data collection instrument consists of a two-day social interaction diary which was used to gather detailed information about the respondents' interactions and the persons they contacted. Besides the interaction diary the instrument included a questionnaire, which was used to collect a number of personal and residential characteristics of the respondents, such as the gender, age, education, income, car ownership, work status, presence of children, partner, involvement in unions or clubs, time pressure, social network size and urban density of the respondent's residence.

The data are analyzed using an analysis framework that consists of a set of linked regression and logistic models that provide insights in travel behavior that stems from social interaction. The models predict for each respondent the number of social interactions, the distribution of social interactions across different purposes, the distribution of interactions across the social categories of the contact person, the distance between the residences of the respondent and the contacted person, the communication mode and whether or not substitution, generation and/or modification occurs. The ability to predict these variables is important from a transportation research perspective, as it allows us to reconstruct the generation of social activities and the relationship between ICT-use and travel demand for social purposes.

The results indicate that individuals' personal and residential variables have only a modest influence on the number of social interactions per day and on the purpose of the interactions. For predicting the distribution of interactions across social categories of the contacted person and for predicting the distance between the homes of the respondent and the contacted person, the model fit is higher but still relatively low. Stronger impacts are found for communication mode choice, resulting from personal and residential characteristics, the purpose of the interaction and characteristics of the contact persons. Finally, the results indicate that substitution, generation and modification all occur at the same time. However, for social interaction the net impact of ICT is rather generation of trips for face-to-face contact than substitution.
References