Extended abstract submitted to Symposium of Urban Modeling, Lyon, France, 15-17th October, 2014

Risk-adverse or hurried commuters: who will pay more for multimodal information?

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Research questions

The emergence of "big data" enables to provide real time information on the availability and the frequency of several transport modes (public transportation, car-pooling, electric car-sharing) and then to build new travel information systems enhancing the use of sustainable modes. However, building and updating such a system is expensive so that users might be asked to contribute to its funding. The presented paper measures potential users' willingness to pay for multimodal travel information systems and aims at contributing to design future travel information systems which are both efficient and rentable.

The present paper aimed at measuring potential WTP for multimodal travel information but also to evaluate to what extent the interest for travel information is motivated by commuters' desire to reduce their travel time or by their aversion for travel time uncertainty.

Previous research on willingness to pay (WTP) for transport information delivered by phone (Khattak et al. 2003, Zhang Levinson 2008, Wolinetz et al. 2001) or by web-application (Molin and Timmermans, 2006) suggests that traveler WTP for such information is very low, in particular among public transportation users. However, this research also shows that WTP strongly increases when real time and accurate information is provided or when additional trip planning options are proposed.

We tested for these findings in the case of the commuters in the *Plateau de Saclay,* an area located 20 km South of Paris. Based on data collected from a sample of workers, we estimated stated preference models to evaluate the WTP for a multimodal information system. As in previous papers, we measure the influence of road trip and individual characteristics on WTP. However, unlike in

other papers, we also estimate potential users' risk aversion and value of time in order to analyze their relationship with the willingness to pay.

Methodology

In order to estimate travelers' WTP for multimodal travel information and to disentangle for their motives for paying, we conducted a web-based survey for *Plateau de Saclay* area commuters, more precisely for workers in several firms and organizations located on the *Plateau de Saclay*.

The first part of the survey collected usual individual characteristics such as gender, age, size of household, residential and work locations. The second part aimed at obtaining details on travelers' trip from home to work (mode(s), departure time, duration, time variability, cost, expected duration and cost with unchosen modes…) but also at measuring their risk aversion through a series of three lottery-type questions involving a trade-off between travel time and time variability.

From data collected in the second part, we estimated travelers' value of time (VOT), value of reliability (VOR) and risk aversion. VOT, first, was measured by estimating a discrete mode choice model whose explanatory variables are the respondents' stated travel time and cost by mode. Similarly, as implemented in Lam and Small (2001), VOR was measured by estimating the effect of time variability and travel cost in a mode choice model. To estimate risk aversion – and then get another measure of travelers' taste for travel time certainty – we implemented the method developed by Picard and de Palma (2005) from the responses to the lottery-type questions.

In the third part of the survey, travelers' interest for a potential multimodal information platform was investigated. From their responses, WTP for the travel information platform was measured and compared across different categories of commuters. Moreover, we estimated a multinomial model with unobserved heterogeneity to explain their choice among the potential services proposed by such a platform.

We analyzed relationships between individual WTP for multimodal information, VOT, VOR and risk aversion by measuring their correlation and by examining the respective distributions of VOT, VOR and risk aversion by potential-user profile.

Results

The results suggest that few travelers are willing to pay for a multimodal platform, mainly because similar travel information by mode is available freely on some web-platforms (*RATP* website for public transportation and Google Maps, Mappy for private car use). Potential users of the multimodal platform are mainly young or high-skilled workers whose motives are either concerns with ecological challenges or a desire to reduce their travel time.

Managers and high-skilled male workers are the most willing to pay for multimodal information, in particular for real time information and indications on travel cost because of their higher VOT and VOR/risk aversion. Females and/or young high-skilled workers and middle-income transit users are

concerned not only with reducing travel time and risk but also with sustainable development and are interested with real time information on travel cost and services availability along their itinerary. Low-skilled individuals have a lower WTP for information and are mainly interested in real time information because of a high risk aversion.

More generally, our results show strong relations between WTP and respectively VOT, VOR and risk-aversion. Thus, to interest potential users and then fund the provision of a multimodal platform, such platforms should basically provide real time information. To attract potential users who might pay more for information, they should provide information on services and carbon-related emissions and target high-skilled females and young male workers.

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