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Title	Trust the source? A revealed preference study on information consumption and travel behaviour
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Abstract	<p>Urban travellers navigate in an environment where information is extensive, multifaceted and constantly updated but nonetheless potentially erroneous. Travel information providers would aim to offer useful information, and when relevant, sell it to their customers. Individuals inevitably form their perception based on this data quality. Competition between sources is determined by individuals' information consumption behaviour. Therefore modelling how the features of these sources have different impacts on individuals' perception and travellers' behaviour. For example, the credibility of waiting times given by a phone app or a station board varies across individuals and trip contexts, and its value is useful for operations of information providers.</p> <p>This research contributes to literature by presenting a modelling approach to the choice of information for travel behaviour, different to ones found in previous work. In existing travel information modelling literature, several basic approaches have been developed for acquisition of information: a change from initial to final plan via information (Peirce and Lappin 2003), a choice between adding a piece of information or stop searching and travel (Chorus et al. 2013), etc. However these concepts are usually simplified to be understandable, for the need to fit in specific travel behaviour model or the ease of simulation modelling.</p> <p>The modelling framework is two-fold and represents the joint choice of travel information and its subsequent impact on travel choice. Considering a one-time instance of actively seeking information before travelling, the first choice is a combination of any of the travel information sources available to the individual, while the second is the decision to travel based on the information provided. Alternative-specific attributes for the first stage are the format and perception attributes (media, years used, frequency of use, perception) of the information sources, and for the second stage the content of those sources (i.e. characteristics of the travel options). The choice in both stages also depends on characteristics of the individual, the context of the trip instance, and satisfaction towards alternatives.</p> <p>Much of the work in the transport modelling community has considered the impact of travel information as a simple attribute on the choice of travel. And with regards to data collection for modelling these behaviours, more complex models considering detailed features of travel information have usually been tested using stated preference (SP) data (Wang et al. 2009; Ben-Elia et al. 2013; Chorus et al. 2013).</p> <p>However simulating the processes of information acquisition, selection and use is difficult in a SP study, because it can hardly re-enact the effort involved in real life to actively seek travel information. And this would therefore represent a bias in the results as opposed to a revealed preference (RP) survey. Therefore this research aims at collecting quantitative data using a RP survey in order to model both the information acquisition and travel choice behaviours. The data collection involves several steps including focus groups, survey design based on the modelling framework, pilot survey and full survey.</p>

The survey sample will comprise of adults using public transport in London, specifically Transport for London (TfL) buses or the Tube. The web-based survey is designed to include questions on demographics, trip preferences, usually used travel information sources and their attributes. It also includes a section with more detailed questions regarding the most recent instance when travel information was sought and used. It will also ask decision satisfaction score ratings and willingness to pay for this information.

Two focus groups, based on existing guidelines and methodologies, were conducted in Imperial College London. Eight respondents per group were invited if they fulfil the survey requirements. The focus group discussions assisted in designing the survey on information acquisition and travel choice. The qualitative findings were translated into an innovative approach to model the acquisition and use of travel information sources for different trip contexts. Early findings from preliminary data collection show that for more familiar trips, individuals tend to use Countdown screens at bus stops and tube stations, phone apps, delays from TfL websites live updates; while less familiar trips require the use of more complete tools such as TfL Journey Planner and Google Maps. From these sources, different types of information are checked specific to trip contexts (familiarity, flexibility, congestion status, convenience). Commuters already have a fixed and small choice set, and want to confirm their habitual choice; while travellers on discretionary trips make sure they choose their best option, which could be least waiting time, fastest travel time or exclusivity of preferred mode. For trips to unfamiliar places, individuals do not have a well formed plan and use travel information as well as their experience to create one. While most respondents seem satisfied with the information they acquire, specific features of these sources are consistently mistrusted and not followed by travellers. This data from the focus groups is used to create the hypotheses that will be tested using the quantitative data from the full scale RP data collection. The paper will also present results from the pilot phase of the RP survey.

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