

10th International Conference on Transport Survey Methods

**Workshop synthesis: Conducting travel surveys using portable devices - role of technology
in travel surveys**

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Abstract

The aim of this paper is to synthesize discussions of a workshop that was developed as part of the ISCTSC10 conference. Workshop attendees discussed the role of technologies such as GPS, smartphones and life-logging cameras in travel surveys, post-processing of location and time data collected by those technologies, their usability, and future opportunities and challenges.

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1. Structure of the Workshop

The purpose of this workshop was to provide attendees an opportunity to focus on the role of technology in travel surveys. The main focus was on contributions of GPS, smartphones and life-logging cameras in the gathering of location and time data to either validate self-reported information and/or reduce respondent burden by automatically providing subsets of relevant travel data. The workshop provided an opportunity to compare these technologies with respect to usability and data quality, as well as to discuss how they can improve, complement or replace typical transport survey methods. The workshop was supported by four paper presentations and five posters. These are listed at the conclusion of this report.

A total of 27 attendees participated in the workshop, which centered about paper presentations and breakout

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groups on the key topics of:

- Survey Design
- Respondent Experience
- Post-processing of data
- Sharing the Experience

2. Survey Design

In this breakout group, the discussion centered about the topic of designing surveys using portable devices. It was agreed that the current use of technology is heavily influenced by the traditional household travel survey design: using technology to replace paper logs rather than looking at what technology could do and designing a survey around that technology. As a result, we may be limiting ourselves in terms of both leveraging the power of the various technologies as well as discovering new methods and techniques that move us far beyond current designs. In addition, with the use of technology comes new issues, such as loss of devices (one US study noted a device loss rate of 30%). Therefore, the survey design should consider such strategies like retrieving the equipment.

Beyond the question of technology itself, there are other design issues that require more consideration. First, sample size: how does the minimum sample size vary based on the length of data collection? If technology enables the collection of multiple days of data, do we need less sample? What new issues emerge with multi-day data collection? It was noted that in most cases, new surveys with portable devices still need face-to-face or other focused recruitment strategies as well as incentives. Therefore, trade-off between recruitment strategies and sample size should be considered. Second, how do we evaluate the quality of data collected through prompted recall surveys? For the workshop attendees the quality of data obtained through that method was debatable. Finally, what is the impact of our instructions and design elements on respondents? Do they read our detailed instructions? How do they define a trip and how does that differ from how algorithms identify trips in the passively collected data collection streams?

3. Respondent Experience

Workshop participants acknowledged that despite our best effort in designing the “perfect” survey, we need respondents to agree to participate for a successful venture. For those who agree to participate, their perceptions about the survey task can vary greatly from what the design was intended to elicit (e.g. a mother dropping a child to school and returning home may be perceived as one trip and not a tour). In addition, there are cultural differences that may influence respondent perceptions regarding what data is being requested.

To that end, workshop participants discussed how to maximize the respondent experience (for maximum participation rates and data collection success). The group identified the following as important considerations with respect to maximizing the respondent experience:

- Include in the survey design tools to train respondents on the technology along with on-call support. In addition, providing incentives was also identified as important.
- Consider sampling and communication for those populations that do not own devices or have a technology bias (such as children, the elderly, low income, and those living “off the grid”)
- Public outreach is important to educate the public on the survey and provide legitimacy for those asked to participate in the survey.
- Identify and monitor metrics associated with respondent burden.
- Consider how new technologies like Google glasses or Life-long Cameras would affect respondent experience and can change our surveys.

Respondent interaction can be impacted by varied privacy laws and best practices in the region conducting the survey (and vary across the world). There continues to be a stated desire to design new surveys that include both the old (paper) and the new (GPS, Smartphone) technologies. This increases respondent burden and also makes it difficult to leverage the power of the new technologies into new and more powerful survey designs.

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