

**New solutions for future
travel surveys**

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Summary

The Government launched five cooperative programmes in the fall of 2016. The purpose of these programmes was to promote exchanges between public-sector actors, the business community, and academia to find innovative solutions to today's societal challenges while enhancing Sweden's global innovative and competitive strength. One of these programmes was *Next generation travel and transport*, under the auspices of which several projects were initiated, including *New solutions for future travel surveys*.

The background to *New solutions for future travel surveys* was the need for a sophisticated understanding of how and why people travel, in order to design a future transport system that can sustainably address existing and future societal challenges. Current methods used in travel surveys have certain problems in terms of coverage, costs, and reporting burden.

The overarching purpose of the project is to study and test new data collection methods, and to consider how various data collection methods can be used, individually or in combination, in future travel surveys as the basis for official statistics.

This report is Transport Analysis's final report on the project. The report presents summaries of completed studies and recommendations for further work.

The project began with a stakeholder analysis, which revealed broadly disparate needs and interests with respect to travel data. The most common questions that stakeholders want answered in future travel surveys are:

What modes of transport are used?

How have travel habits changed over time?

How do different groups travel?

What are the purposes of trips taken?

Data regarding both individuals and their trips are needed to answer these questions.

There are several potential new sources and collection methods for travel data. These can be divided into seven categories: mobile apps, web surveys, payment systems, mobility network data, social media, in-vehicle equipment, and roadside equipment. The data sources and collection methods measure various parameters, primarily the movements of vehicles (traffic) or of people (transport). They also measure subsets (e.g., all modes of travel or individual vehicle types) and involve different samples (e.g., total populations and/or specific temporal and spatial samples of people). The data sources and collection methods that can answer most of the relevant questions in context are those designed for conducting travel surveys, i.e., traditional travel surveys, mobile apps designed for collecting travel data, and web surveys for collecting travel data.

Three pilot studies have been conducted within the project, one involving data collection from a web survey and mobile app, and two using mobile network data. Based on these studies, and on experience gained from previous travel surveys, Transport Analysis has drawn the following conclusions:

- New data collection methods look promising but are not yet considered capable of replacing traditional travel surveys. Travel surveys requiring active input from respondents are still needed. One reasonable future goal is the ability to generate statistics based on both sample surveys involving active respondent input and passively collected data from the mobile network. Currently, these collection methods should be viewed as complementing one another, rather than as substitutes.
- In the case of mobile network data, the biggest challenge is finding ways of delivering mobile network data of sufficient accuracy and transparency while protecting personal privacy, so that the data can be used in official statistics. Issues in terms of how a trip is defined and scaled up from the subscriber level to the total population level also need to be studied in greater depth. We have not yet seen mobile network data being used to obtain data about travel modes, individuals, or trip purposes.
- Data collection using mobile apps is of interest partly because it is considered to provide more accurate data in terms of trip lengths, travel times, and origins and destinations, but also because it can be used to analyse routes. This would be of particular interest in connection with, for example, traffic planning at the local level. At the national level, these advantages are not currently considered to outweigh the disadvantages associated with the lower responses rates so far achieved in travel surveys conducted using mobile apps.
- There is a danger that the challenges posed by declining response rates in traditional travel surveys using random samples will persist and even worsen. It is consequently important to continue to study alternative methods for use in such surveys, such as alternative recruiting methods, as well as other data sources, such as mobile network data, that require no active respondent input.
- One important future challenge is the ability to compare data from different sources and collected using different methods. The completed pilot studies show that data regarding trip length and number of trips differ depending on the collection method used. What is reported as a trip by a respondent depends both on how the respondent recalls and perceives the trip, and on how the question is posed and with what method. Different definitions of a trip are probably used when interviewers or individual respondents make the judgment, versus when the number of trips is estimated using algorithms. Knowledge in this area is important to the ability to monitor how travel is evolving over time, something that the stakeholder analysis showed was one of the most desired application areas of travel surveys.

Based on these conclusions, Transport Analysis recommends that work continue to study alternatives to sample-based surveys with random samples that require active respondent input. Mobile network data offer one such alternative. A logical next step would be to study and perhaps formulate standards for the types of data and level of detail in data from the mobile network that need to be made available to serve as the basis for official statistics. This must be done taking into account both business confidentiality and personal privacy. Issues pertaining to the definition of a trip and extrapolation to the population level also merit further study. It would be appropriate for such developmental work to be carried out cooperatively by several mobile operators and by several agencies responsible for statistics. It would likely be more attractive for operators if they could deliver the same type of data, packaged in the same way, to multiple actors.



Transport Analysis is a Swedish agency for transport policy analysis. We analyse and evaluate proposed and implemented measures within the sphere of transport policy. We are also responsible for official statistics in the transport and communication sectors. Transport Analysis was established in April 2010 with its head office in Stockholm and a branch office in Östersund.