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The Netherlands Mobility Panel: An innovative design approach for web-based longitudinal travel data collection

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Abstract

This paper introduces a new household panel – ‘The Netherlands Mobility Panel’ (in Dutch: *MobiliteitsPanel Nederland MPN*). To collect trip and trip stage data for the MPN, we developed a state-of-the-art travel diary, the design philosophy of which will be explained in this paper. Further, the initial assessment results based on the first data collected autumn 2013 is presented, providing insights into the benefits of the travel diary design. We explain how differences in data quality relate to differences in diary design, diary layout, and diary content.

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1. Introduction

Moving to a new home, having children or getting a new job: all these changes in peoples’ lives will influence their travel behaviour. But how do their mobility patterns change? What does ageing of the population, the financial crisis or new trends, such as Facebook and Twitter, mean for car use? Cross-sectional data can be used to partly study these societal trends and their impacts on travel behaviour on an aggregated level. However, to really understand the underlying mechanisms, travel data of individual travellers at several points in time is needed

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(Ortúzar et al. 2011). Such data are also necessary to calibrate the large-scale strategic transport models that are used for example in the Netherlands for ex-ante project evaluations, as well as to improve the predictive validity of these models by better describing underlying behavioural dynamics. To identify and explain day-to-day variations in mobility and the role of habits in travel behaviour, data should not only be collected for a single day but for multiple consecutive days.

In the Netherlands, a state-of-the-art household panel – ‘The Netherlands Mobility Panel’ (in Dutch: *MobiliteitsPanel Nederland MPN*) was designed and implemented to fulfil the data needs described above. The MPN’s objectives are to determine the short-run and long-run dynamics in the travel behaviour of Dutch individuals and households and to determine how changes in personal and household characteristics and in other travel-related factors (e.g. economic crisis, reduced taxes on sustainable transport or changes in land-use) correlate with changes in travel behaviour. In July 2013, respondents from 2,500 complete households filled out various questionnaires and recorded their travel data using a three-day travel diary. This will be repeated at least annually with the same respondents over the next four years.

In this paper, we will introduce the overall MPN set-up. The main scientific contribution of this paper concerns the innovative design approach of the web-based diary, and the design philosophy, which will be explained in detail in this paper. We will not only discuss the design, but also present the initial assessment results based on the first data collected during an 8-week period in autumn 2013, providing insights into the effects of the travel diary design. This assessment consists of three parts. First, the trip characteristics from our MPN data are compared to travel data collected by Statistics Netherlands (in Dutch: Centraal Bureau voor de Statistiek - CBS) by means of their one-day trip-based diary (OVIN, formerly called OVG/MON). Second, the day-to-day variations in trip and response characteristics are determined and compared to findings from literature. Third, the feedback obtained in in-depth, face-to-face interviews, held among a subsample of respondents in parallel to the first wave, is analysed.

This paper is structured as follows. Section 2 briefly discusses the history of long-term travel data collection in the Netherlands. In Section 3, the overall setup of the MPN is presented, showing the data to be collected with the various questionnaires and the travel diary. Section 4 discusses in detail the innovative design of our travel diary and explains the rationale behind the various choices made in the design process. Section 5 presents the first assessment of the newly developed travel diary design. Section 6 presents our conclusions.

2. Background

Several long-running surveys, in which travel data are collected (to varying levels of detail), are currently being conducted in the Netherlands. From 1975 onwards, the Netherlands Institute for Social Research (in Dutch: Sociaal en Cultureel Planbureau - SCP) has carried out its cross-sectional Time Budget Survey (TBO) once every five years. Since 1978, Statistics Netherlands (CBS) annually conducts the Dutch National Travel Survey (OVIN, formerly called OVG/MON). With a sample size of 40,000 respondents per year, OVIN provides the opportunity to study trends in travel behaviour on an aggregated level and constitutes an important data source for the calibration and validation of strategic long-term traffic and transport models. OVIN is a cross-sectional data collection, which means that changes in travel behaviour on an individual level cannot be determined.

In the 1980s, the Netherlands was one of the first countries to conduct a mobility panel survey, known as the Longitudinal Mobility Survey (LVO). The LVO panel (Meurs et al 1989) consisted of 1,500 households (about 3,500 people aged 12 and older). All panel members kept a diary for seven days, twice a year, in which they made detailed entries of all their trips. The main reason given for discontinuing the LVO at the time was the high costs – panel members received printed diaries in which to record their trips, and the data was then processed by hand. When the LVO was discontinued in 1989, the Netherlands no longer had a travel panel survey. However, technological progress has been such that prospects for setting up a new panel have greatly improved; for instance, high levels of Internet connectivity has vastly reduced data collection costs.

The KiM Netherlands Institute for Transport Policy Analysis, Goudappel Coffeng, and the University of Twente have initiated the development of a panel survey on individual and household travel, titled ‘The Netherlands Mobility Panel’ (in Dutch: *MobiliteitsPanel Nederland - MPN*) which will take the place of the LVO and shed light on travel dynamics.

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