



Long-term travel data in The Netherlands

- In The Netherlands we have several long-term surveys that collect travel data in differing levels of details
- Time budget survey (TBO):
 - every 5 years; last time in 2011; executed by SCP/SN; \pm 2000 households; cross-section; record all activities during one week for every 10 min; extensive list of personal and household characteristics; limited amount of mobility data
- Dutch National Travel Survey (OVG/MON/OViN):
 - continuous survey; \pm 40,000 individuals; executed by SN; cross-section; record all trips/trip stages for one day; limited number of personal and household characteristics; more elaborate mobility data
- Longitudinal Mobility Survey (LVO):
 - 1984-1989; \pm 1,500 households; same group of respondents (panel); record all trips/trip stages for one week; extensive list of personal and household characteristics; more elaborate mobility data
- KiM, University of Twente and Goudappel Coffeng initiated development of new travel panel survey – The Netherlands Mobility Panel (MPN)



Why a travel panel survey?

- explain trends in travel behaviour on an aggregated as well as an individual level
- uncover individual year-to-year variation (life events)
- better calibrate/validate large strategic transport models



Why a travel panel survey?

- explain trends in travel behaviour on an aggregated as well as an individual level
- uncover individual year-to-year variation (life events)
- better calibrate/validate large strategic transport models
- study influence of intra-household interaction on travel behaviour
- enable estimation of behavioural travel choice models
- uncover individual day-to-day variation (habit)



MPN's size and composition

- 2000 complete households and 4400 respondents
- Funding for 2013-2016, 1 wave per year
- Online screening, household and individual questionnaires
- Three-day online travel diary
- Household members 12+
- September till November (except fall holidays)
- Stratified sample drawn from access panel
- Opportunity to ask additional questions to same respondents and repeat survey for new respondents



Research instruments

Research instrument	What?
Screening questionnaire	<ul style="list-style-type: none">• willingness to participate• travel data for the non-response analysis
Household questionnaire	<ul style="list-style-type: none">• composition of household, main wage-earner• annual gross household income• ownership of desktop computers and laptops• transport vehicles owned by a household• car details (licence plate number, annual mileage, main user)• car parking possibilities
Individual questionnaire	<ul style="list-style-type: none">• age, gender, monthly salary• respondent's motherland, their father's and mother's• number of contracted working hours, number of average working hours in practice, type of work and workplace• travel costs subsidies• driving licence, type of travel cards and transport vehicle availability• preferred mode of transport• valuation of transport facilities and traffic conditions in the neighbourhood• access to, and use of, Internet facilities
Additional individual questionnaire	<ul style="list-style-type: none">• <u>even</u> years: preferences towards car ownership and use, the environment, the economy and housing location• <u>uneven</u> years: the impact of ICT use on mobility for working and shopping, and the impact of social media on social networks and on mobility for social activities
Travel diary	<ul style="list-style-type: none">• addresses of visited locations and main activities• trips in terms of departure and arrival times, order in which transport modes were used, distances covered, parking costs, delays and travel companion



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Design choices

- travel data collection approach, e.g. **self-completion** or automatic passive trip registration, **computer-aided** or not computer-aided, **self-reporting** or interview, **web-based** or dedicated app, and **with** or without **memory jogger**



Design choices

- travel data collection approach, e.g. households or individuals, self-completion or automatic passive trip registration, computer-aided or not computer-aided, self-reporting or interview, web-based or dedicated app, and with or without memory jogger
- diary type, e.g. trip-based, activity-based or **place-based** travel diary, one-day diary or **multiple-day diary**, **respondents equally assigned over weeks in research period and days of the week**, only home address or **full address information**



Design choices

- travel data collection approach, e.g. households or individuals, self-completion or automatic passive trip registration, computer-aided or not computer-aided, self-reporting or interview, web-based or dedicated app, and with or without memory jogger
- diary type, e.g. trip-based, activity-based or place-based travel diary, one-day diary or multiple-day diary, respondents equally assigned over week in research period and days of the week, only home address or full address information
- communication and instruction, e.g. **sms, telephonic and e-mail reminders, instruction manual, film and lay-in, with or without logo, with or without incentives, helpdesk and 24-hours online assistance, additional 72 hours to fill out diary**



Design choices

- implementation and visualisation, e.g. **webpage lay-out, with** our without **automated checks and warnings**



Design choices

- implementation and visualisation, e.g. webpage lay-out, with or without automated checks and warnings
- sample selection, e.g. sample drawn from population register or **access panel, only in Dutch** or translated into different languages, mixed-mode or **only web-based**, do or **don't provide Internet access for all respondents**, rotating or **non-rotating refreshment scheme**



Webpage to fill out locations, activities and times

TNS Nipo Logged in as Test05 | Log out

[Home](#) [My addresses](#) [Daily Schedules](#) [Change password](#)

[Day 1](#) [Day 2](#) [Day 3](#)

Daily schedule for Friday September 12 2014

Your next location is **Office** [Change location](#)

At what time did you arrive? 09:03 I arrived the next day

What did you do? Paid job at a fixed location

At what time did you leave? 17:30 I did not leave this location

Where did you go? Supermarket

The locations you have visited today

	Location	Time of arrival	Activity	Time of departure
00.00	Home		Activities at home	07.45
	School	08.11	Dropping off people	08.25
	Office	09.03	Work outdoors - Paid job at a fixed location	17.30



Check locations, activities and times

TNS Nipo logged in as TestUser1, log out

Home My addresses Daily Schedules Change password

Day 1 Day 2 Day 3

Daily schedule for Friday September 12 2014

Finally we will check all your movements. You can now specify per movement if the information is correct. If the given information is correct, you will be asked for additional details about this specific movement.

The locations you have visited today

Time	Location	Time of arrival	Activity	Time of departure
00:00	Home		at home	07:45
08:11	Office	08:25	at people	08:25
08:12	Office	08:25	jobs - Paid job at a fixed location	17:30
08:25	Office	18:37	series	18:37
09:03	Home	20:04	home	20:04
17:30	Office	21:42	active participation	21:42
18:12	Office	23:59	home	23:59
18:37	Office			
18:45	Home			
20:04	Home			

Between 08:03h and 17:30h you were at the location Office. Is that correct?

Yes No



Check trips

TNS Nipo Logged in as **Tent001** | Log out

Home My addresses Daily Schedules Change password

Day 1 Day 2 Day 3

Daily schedule for Friday September 12 2014

Finally we will check all your movements. You can now specify per movement if the information is correct. If the given information is correct, you will be asked for additional details about this specific movement.

The locations you have visited today

Time	Location	Time of arrival	Activity	Time of departure
00.00	Home		Activities at home	07.45
08.11	School	08.11	Dropping off people	08.25
08.25	Office	09.03	Work outdoors - Paid job at a fixed location	17.30
17.30	Office		Work outdoors - Paid job at a fixed location	18.37
18.12	Supermarket		Active participation	20.04
18.37	Home		Active participation	21.42
20.04	Home		Active participation	23.59

Between 17.30h and 18.12h you made a movement between Office and Supermarket. Is that correct?

Yes No



Webpage to fill out trips and trip stages

TNS **TNS Nipo** Logged in as: Test005 | [Log out](#)

[Home](#) [My addresses](#) [Daily Schedules](#) [Change password](#)

The next questions concern your movements on 14-09-2014 from the office to the supermarket between 17.30 and 18.12

The means of transportation you have already entered

Means of transport	Delete
Walking	
Public transport – Tram	
Public transport – Train	

Have you switched or changes your means of transport? Yes No

Which means of transport have you used for this movement?

How many people were you travelling with?



Travel diary assessment I

- Compare travel data collected with our MPN travel diary to travel data collected for the Dutch National Travel Survey OViN by Statistics Netherlands
- Test if and to what extent differences in trip characteristics are caused by differences in diary design, such as: place-based vs. trip-based diary, dedicated website vs. web-based travel questionnaire, directly applying logical constraints and logical relations during trip and trip stage reporting

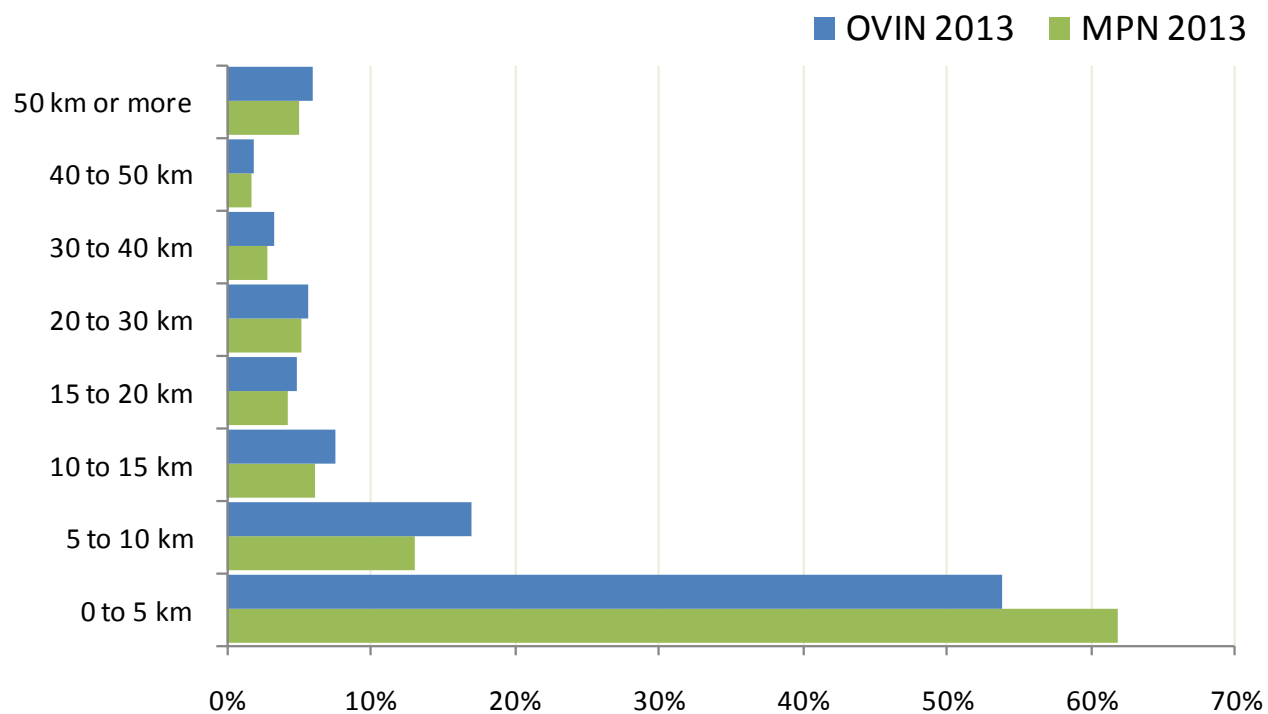


Reported mobility

- In MPN compared to OViN:
 - number of reported trips pppd, average travel distance pppd and average travel time pppd are higher
 - average travel distance and travel time per trip are lower
 - more short trips (especially walking and cycling trips) are reported
 - more non-home-based trips are reported
 - more infrequent or incidental trips are reported

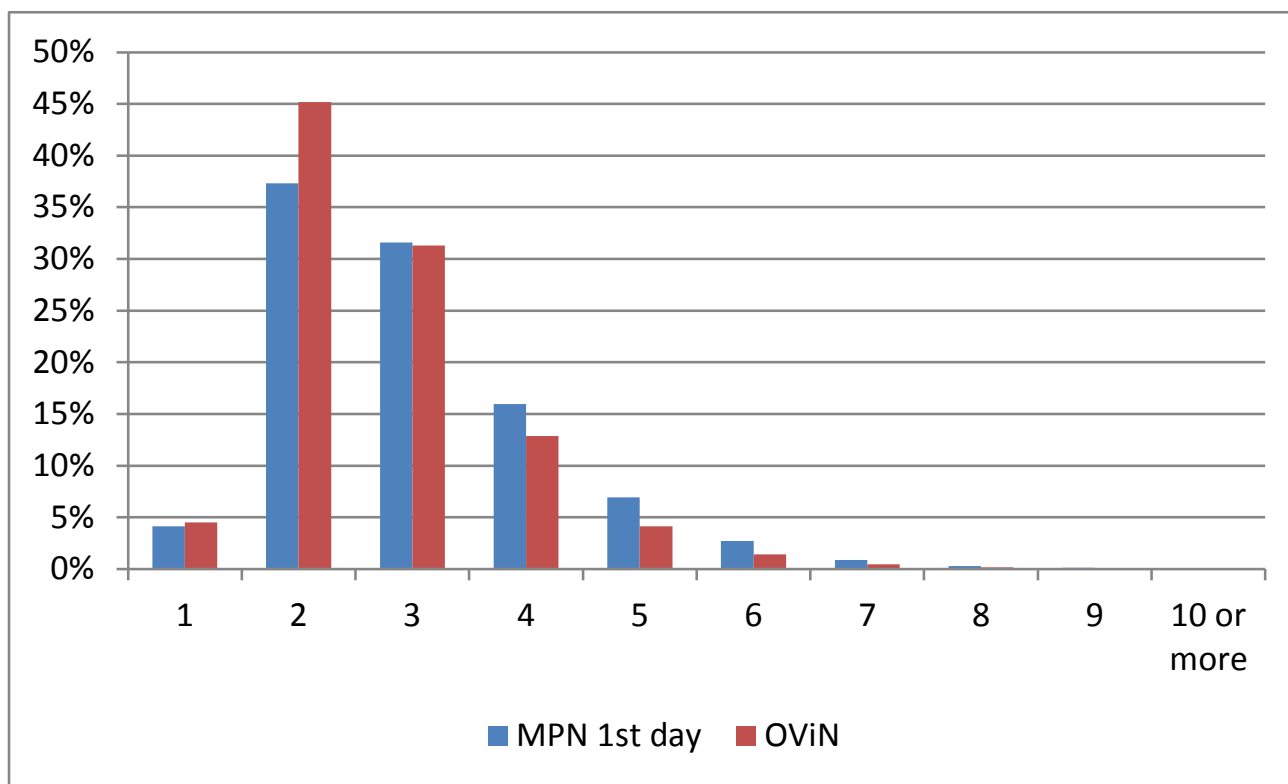


Reported mobility





Unique visited locations



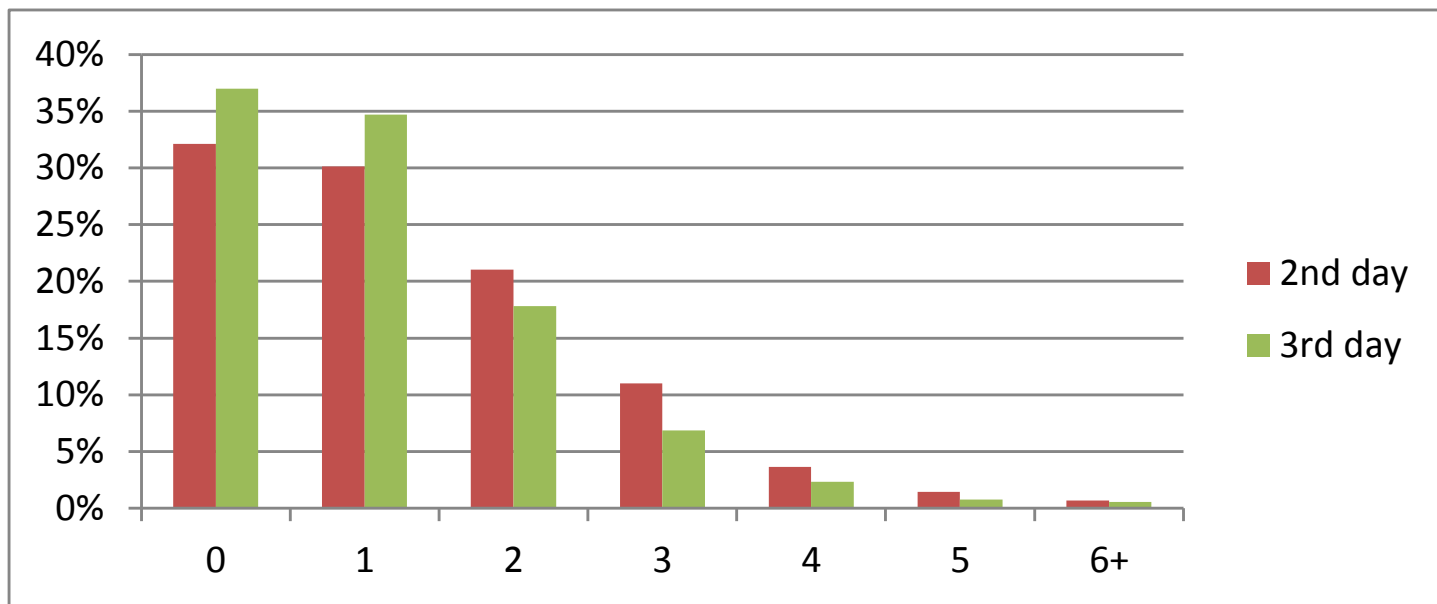


Travel diary assessment II

- Study variation in day-to-day variation in trip and response characteristics and determine how that relates to findings from literature

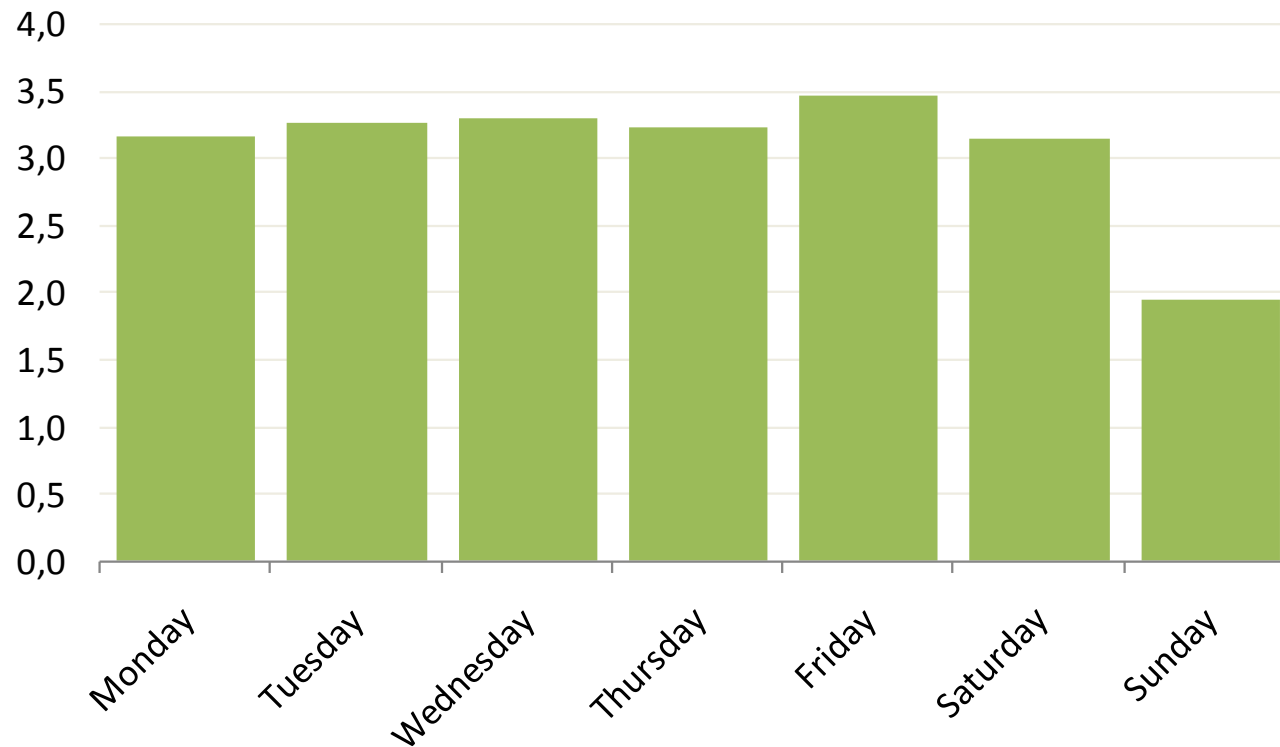


Unique visited locations



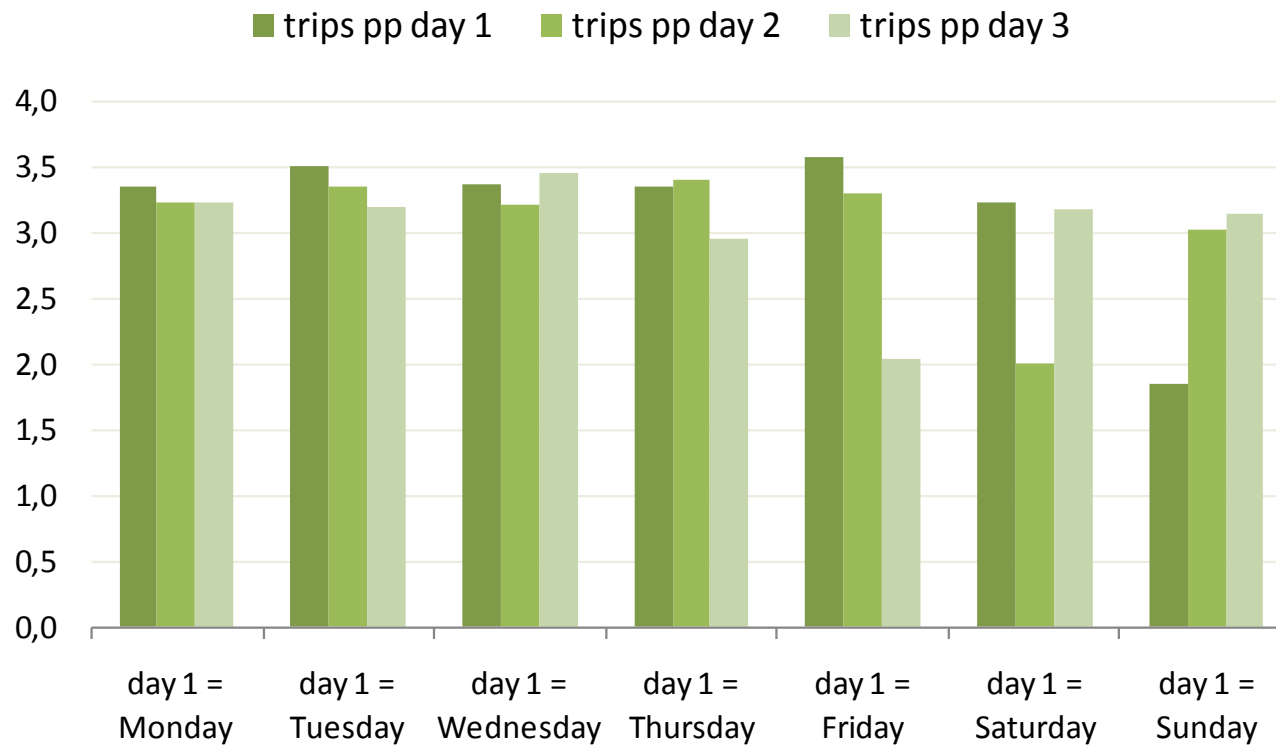


Day-to-day variation in number of reported trips





Diary fatigue





Travel diary assessment III

- To assess data collection process and newly developed diary, in-depth face-to-face interviews were held with a small random subsample of respondents in parallel to wave 1
- Interviews structured with questions about:
 - look&feel MPN-website
 - understanding web-based diary
 - instruction manual / film and animation movie
 - helpdesk
 - household response behaviour
 - practical issues



Main results from in-depth interviews

- Interaction between household members filling out web-based diary had a positive impact on number of fully responding households
- Gatekeeper plays important role:
 - Reads instruction manual and/or watches instruction film
 - Reminds household members when the research starts, to bring the memory jogger and to fill out web-based diary
 - Sometimes fills out online diary for other household members
 - Sometimes fills in gaps in children's memory joggers



Conclusions

- Our travel diary design appears to be providing reliable travel data
- Our journey just started! First data analysis steps:
 - Travel behaviour of regular and irregular e-shoppers
 - Changes in shopping mobility due to e-shopping
 - Mode choice of commuter trips
 - Retrospective study of life events
 - Impact of (in-car) traffic information on travel behaviour
 - Attitudes of young adults on car use and car ownership