

## NATIONAL TRAVEL STATISTICS – TRAVEL IN EUROPE

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### Abstract

This paper describes work carried out under the OPTIMISM project, which is funded by the European Commission under the 7<sup>th</sup> Framework Programme. OPTIMISM will develop strategies and methodologies for optimising passenger transport systems based on co-modality ICT solutions. OPTIMISM aims to provide insight into transport systems and people's travel behaviour, in order to identify future changes in passenger travel systems that lead to more sustainable travel.

In order to understand travel patterns and travel behaviour, it is important to collect data on travel patterns. As part of the OPTIMISM project, an assessment has been carried out of existing methodologies for collecting travel data in European countries. This paper describes how different countries collect travel data and information on travel resource in their National Travel Surveys (NTS) and assesses if existing NTS can be used to make realistic comparisons between travel patterns and travel behaviour in European countries.

### Introduction

The aim of the OPTIMISM project is to *optimise passenger transport systems using co-modality ICT solutions, while keeping in mind the needs of passengers and ensuring that the impacts of any proposed measures are carbon neutral*. It is intended in this project to examine passengers' current travel needs, mobility patterns and business models and to examine how future changes might be used to bring about more sustainable travel patterns.

To achieve this aim, work is taking place in 3 areas:

- (1) Identifying gaps with respect to harmonised travel data,
- (2) Defining demand and supply factors that shape transportation systems and mobility patterns, and
- (3) Defining the potential decarbonisation of the passenger transport system and ensuring sustainability of the system.

As part of the OPTIMISM project, the travel data collection techniques and methodologies of European countries were investigated. This was in order fulfil the first of the objectives as set out above. This paper describes that work. The specific objectives of this part of the OPTIMISM project were:

- (1) To establish what countries are collecting National Travel Surveys
  - (2) To identify the information and travel data that is collected in those NTS
  - (3) To examine how the surveys are designed in terms of classification of data, sampling and survey implementation
  - (4) To establish if travel data from the different countries can be compared
  - (5) To identify how NTS might be harmonised or improved in future years with respect to co-modality.
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**Methodology**

The first stage of this work was to decide what constituted a NTS and what surveys should be included for analysis in the project. At an early stage, it was decided that only surveys that fulfilled the following criteria should be included in any subsequent analysis:

- (1) The surveys had to have taken place within the last 10 years.
- (2) Only “national” surveys were included. So any surveys that were of a regional nature were excluded.
- (3) Both motorised and non-motorised modes as well as public and private modes should be covered by the surveys.
- (4) The surveys should not focus on a particular trip type (for example commuter trips) but should consider the most common trip purposes.
- (5) The surveys should not focus on trips of a particular length (short or long distance).

Once these criteria were established, countries with NTS could be identified and those NTS analysed in more detail. A questionnaire was designed to be distributed to the EU27 plus 3 others (Norway, Switzerland and Serbia) which would find out if a NTS existed in each country and, if it did, what methodologies were used to collect data and what data was collected. In the initial stages, before the questionnaire was finalised, a pilot version was tested by partners in the OPTIMISM project in Germany, Ireland and the Netherlands. Using the results of this pilot survey, a final questionnaire was designed and was issued to the countries as listed in Table 1.

<b>Countries which have been asked to fill the questionnaire</b>		
Austria	Ireland	Slovakia
Belgium	Italy	Slovenia
Bulgaria	Latvia	Spain
Cyprus	Lithuania	Sweden
Czech Republic	Luxembourg	Switzerland
Denmark	Malta	United Kingdom
Estonia	Netherlands	
Finland	Norway	
France	Poland	
Germany	Portugal	
Greece	Romania	
Hungary	Serbia	

**Table 1:** Countries contacted

Each of the countries listed in Table 1 was assigned to a partner within the OPTIMISM project. The partner received the questionnaire for that country which was then sent to the authority within that country that had responsibility for the collection of travel data. The questionnaire had a number of sections:

Section A:

In this section, respondents were asked to provide basic survey information such as who commissioned the survey, how it was funded, how regularly it was carried out and what purpose there was for collecting the data.

Section B:

In this section, respondents answered questions about sample sizes and composition, about modes covered in the survey and about methodologies employed to collect the data.

Section C:

In this section, respondents stated to whom final data was made available and about the format of the data and the costs of accessing them.

Section D:

The type of trip data that was collected in the survey was detailed in this section: details on how trip lengths, purposes and modes were recorded, on what personal data was collected and on what vehicle data was collected were provided by respondents in this section of the questionnaire.

Section E:

Respondents provided information on the quality control checks that were in place for the NTS and about plans for future NTS.

Section F:

Here, respondents were asked to provide travel pattern data from their surveys which showed trip rates by trip length, mode, purpose, age and gender of participant.

<b>Countries for which the questionnaire was completed</b>	
Belgium	Italy
Cyprus	Latvia
Finland	Netherlands
France	Slovakia
Germany	Spain
Hungary	Sweden
Ireland	United Kingdom

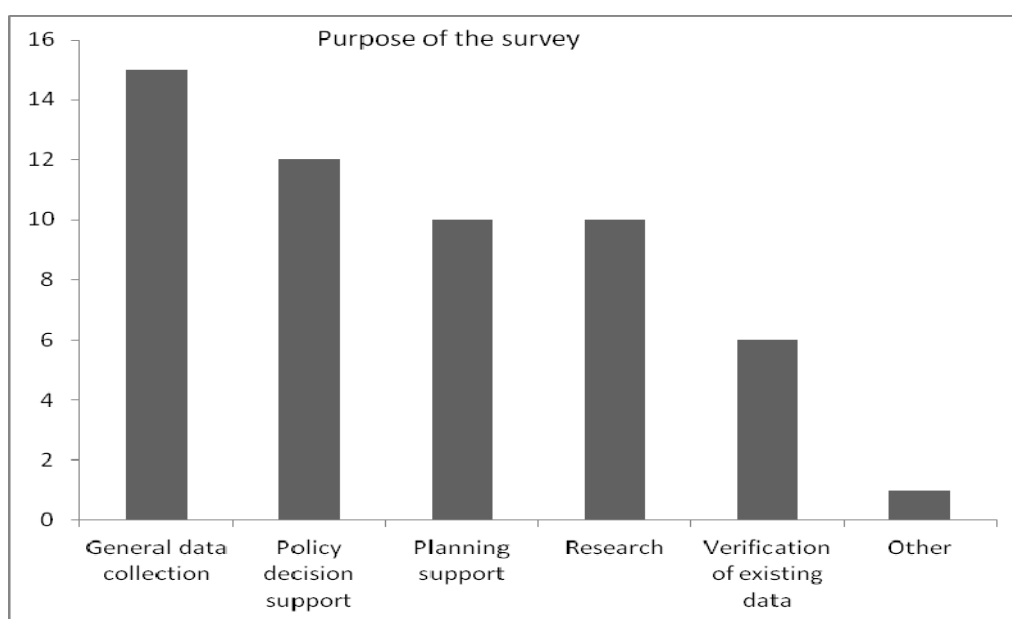
**Table 2:** Countries included in the analysis

The questionnaires were distributed to 30 countries in March 2012 and responses were received up to the end of April 2012. Of these, a number did not respond to the survey and others had not conducted a NTS that fulfilled the criteria as set out above. In the end, relevant information could be collected for only 15 of the 30 countries listed in Table 1. The

15 countries are listed in Table 2. For all but one of these countries, the questionnaire was completed by a respondent who worked for the authority with responsibility for the NTS in that country. In the case of France, the survey was not completed by the relevant agency but the questionnaire was completed using publicly available information on the website of the NTS ([http://www.statistiques.developpement-durable.gouv.fr/transports/r/transport-voyageurs-deplacements.html?tx\\_ttnews\[tt\\_news\]=22128&cHash=161fa25e2efb157460e300ac01b70ef1](http://www.statistiques.developpement-durable.gouv.fr/transports/r/transport-voyageurs-deplacements.html?tx_ttnews[tt_news]=22128&cHash=161fa25e2efb157460e300ac01b70ef1)) and from SHANTI (<http://shanti.inrets.fr/>).

## Results:

The questionnaires showed that in most of the countries listed in Table 2, NTS were the responsibility of statistical agencies within the countries, who usually commissioned and funded the surveys and held the data afterwards. It was not uncommon, however, for research organisations or universities to have a role in holding data, for example in Germany and in Ireland. The most common reason given for conducting a NTS was “General Data Collection”, with “Policy Decision Support”, “Planning Support” and “Research” also being common reasons, as demonstrated in Figure 1.



**Figure 1:** Why is the NTS conducted?

The travel data was generally used by government agencies, as one would expect according to the given purposes for data collection. Researchers, communities/municipalities and policy makers also were frequent users of NTS in most countries. Very few countries said that the NTS was used by media, private individuals or commercial or industrial groups. In most countries, the data was not provided to these groups.

When asked about how regular data collection was in each of the countries, it was apparent that this varied quite significantly across Europe from quarterly to every 5 years, as shown in Table 3. This makes comparing data from different countries quite difficult as a quarterly travel survey is quite a different instrument to one that is collected every 5 years and some surveys are quite old (Sweden’s last survey was in 2006). For a number of countries, data collection is irregular.

Country	Last date of survey	Frequency of data collection
Belgium	2010	No regular data collection
Cyprus	2009	Annually 2007-9 Survey has been discontinued due to austerity measures
Finland	2011	Every 6 years
France	2008	Every 10 years approximately
Germany (MiD)	2008	Irregularly
Hungary	2009	3-5 years
Ireland	2009	The NTS has only been collected once
Italy (ISFORT)	2011	Since 2000 each year quarterly
Latvia	2003	Once
Netherlands	2010	Annually
Slovakia	2011	Quarterly
Spain	2007	Irregularly
Sweden	2006	Next survey 2011-13 - but data collected annually. Between 2007-10 no surveys were conducted Annually. From 1994 until 2001 Fourth quarter 2005, Third quarter 2006
Switzerland	2010	5 years
United Kingdom	2010	Continuous survey (i.e. fieldwork was conducted on a monthly basis)

**Table 3:** Survey frequency

Table 4 shows the sample sizes used in the different countries, and the methodologies adopted. It is apparent from this that sample sizes vary significantly and probably relates somewhat to how the surveys are being used. Methods for selecting samples also vary in terms of their complexity and in terms of what types of respondents are studied. The most obvious difference is that some countries do not collect information from all age groups, with a number of countries not collecting data from children, as shown in Table 5.

COUNTRY AND SURVEY	SAMPLE SIZE AND UNITS	SAMPLING APPROACH
Belgium	8,532 Households 15,821 Individuals	Random sample
Cyprus	1,056 Households 2,410 Individuals	Stratified sampling. Up to 3 members of all ages interviewed from each household
Finland	12,318 Individuals	Random sample
France	20,178 Households 18,632 Individuals	Population frame is the population census and new addresses (houses built since last census) Stratified, multistage sampling

<b>COUNTRY AND SURVEY</b>	<b>SAMPLE SIZE AND UNITS</b>	<b>SAMPLING APPROACH</b>
Germany (MiD)	25,922 Households 60,713 Individuals	Two stage random sampling with geographical stratification. Sampling was taken at community level by communal registration offices. Sampling units: individuals aged 14 and over, registered as residents
Hungary	1,000 Households 25,000 Individuals	Sample from a tourism survey (Travel habits of Hungarians)
Ireland	7,245 Households 7,221 Individuals	A three stage sample design was used. 1) 2600 small areas (blocks) were selected at county level to reflect population density. Each block contained 75 dwellings on average. The sample of blocks is fixed for 5 years for the QNHS. 2) 15 households were surveyed from each block of wave 3 and 5 households for the NTS survey sample. 3) From each of the 15 households, 1 person aged 18 or over was randomly selected to participate in the module and was randomly assigned a travel reference day.
Italy (ISFORT)	1,5000 Individuals	Persons aged between 14 and 80 years are sampled and the sample is stratified by sex, age classes, demographic size of municipalities and region. Regions with fewer inhabitants are oversampled to reach a minimum of 400 observations, so that it is possible to perform analyses at a regional level.
Latvia	2,476 Households 6,208 Individuals	Stratified random sampling
Netherlands	43,400 Individuals	Not given
Slovakia	1200 Individuals	15 year and over
Spain	No data provided	Selection of section and households in the Register Office. Household member selection
Sweden	27,647 Individuals	Randomly selected
Switzerland	31,950 Households 33,390 Individuals	Randomly over the year with equal probability
United Kingdom	8,775 Households 20,839 Individuals	Random sample drawn from the Postcode Address File (PAF)/Multi-stage stratified random sample

**Table 4:** Survey Samples

COUNTRY/SURVEY	WHO IS INCLUDED IN THE SAMPLE?
Cyprus, Germany, Hungary, Netherlands, Spain,	All ages
Belgium, Finland, France, Latvia, Switzerland	Age 6 and older
Sweden	Age 6 to 84.
Italy	14 and over
Slovakia	15 and over
UK	17 and over
Ireland	18 and over

**Table 5:** Ages of respondents in sample

Most countries used traditional, face to face or phone interviews to collect travel data, with only France using GPS to collect travel data. This was on a trial basis in the last NTS conducted in France. Most NTS are one-off, cross-sectional studies, with only Finland, Slovakia and Sweden using a panel survey<sup>1</sup>. Countries collect similar personal data (age, gender etc) and all countries collect information on trip lengths, trip durations, trip purpose, modal choice and numbers of trips per day. Most also collect data on passenger kilometres but less than half collected data on vehicle kilometres. Comparing some of this data could be quite difficult. For example, countries tended to group trips into trip lengths and trip durations but they used different groupings from each other. The UK collected trip lengths in miles.

Respondents were asked to describe what modes and trip purposes were included in the survey. In terms of modes, all countries included walking, bicycle, car and different forms of public transport. However, there were some variations in modes, with some countries asking about more unusual modes, such as roller-blades in Finland. In terms of trip purposes, there was a lot of variation between countries in terms of how they classified trip purposes, in particular social and leisure trips, which probably reflects cultural differences in countries. For most countries, it was the "main" mode and the "main" trip purpose that people were questioned about and so it would be difficult to analyse multi-modal trips or co-modality.

In the questionnaire, respondents were asked if the NTS collected other data such as information on household types, parking information, vehicle ownership and use. Most collected information on vehicle ownership and use but the level of detail with which this was collected varied. Few collected data on parking availability at work, but more did so about parking availability at home. Respondents were also asked if the NTS collected data on fuel use and emissions, which most did not.

All countries had in place internal controls and quality checks for the surveys and several countries indicated that they are planning future NTS.

<sup>1</sup> The German Mobility Panel has not been considered within the detailed analysis.

Respondents were asked to complete a number of tables showing trip rates by gender, age, trip purpose and mode. It had been intended to compare trips rates between countries. However, the data was not provided by all countries: only 9 countries presented the data. Even for these 9 countries the format in which they provided the data was such that it was not possible to compare trip rates in any realistic or reasonable manner. Some countries record these as absolute numbers, some as trips per person and others as annual trip rates, despite clear indication in the questionnaire that trip rates per person and per day were required. When comparing trip lengths and trips durations, again countries used different groupings to record trip lengths and durations and so it proved impossible to present tables comparing the numbers of trips by different trip lengths, even for the 9 countries which did return data.

Country	Number of daily trips per person on a national average	Average trip length	Average trip duration	Comment
Finland	2.9	14.3km	22.7 minutes	
Germany	3.4	11.5 km	24,2 minutes	
Hungary	3652197	10.9km	24.0 minutes	Hungary reported the total number of trips in thousands at a national level per day.
Italy	2.7	12.2 km	21.8 minutes	Italy reported the number of people who made at least one trip rather.
Latvia	3781400	8.7km	Not reported-	Latvia did not explain how they recorded the numbers of trips, but it is apparent that this is not a daily trip rate per person.
Spain	123364.8	Not reported	Not reported	Spain reported total number of daily trips in thousands.
Sweden	2.8	15.8km	24.1 minutes	
Switzerland	37.3	7.2km	31.1 minutes	
United Kingdom	973	Not reported	Not reported	UK reported number of trips per thousand people.

**Table 6:** Summary of trip data



Table 6 presents a summary of the data provided by the 9 countries. In the survey, countries were asked to report trip rates per person per day and by purpose. Each country used different purposes and then presented an overall trip rate. However, as can be seen from this table, Latvia, Hungary, the UK and Italy did not provide daily trip rates per person but count trips in a different way.

The other columns in Table 6 show the average trip lengths and durations. With such a small group of countries, drawing any meaningful conclusion is difficult. However, average trip rates are broadly similar, although it appears that trips are shorter in length, longer in duration and more frequent in Switzerland.

## **Conclusion**

It is apparent that while a number of countries collect data on national travel patterns in Europe, any realistic comparison of the data resulting from these surveys is difficult for a number of reasons:

- (1) Sampling methodologies and approaches vary quite significantly. Sample sizes are also quite dissimilar. Without a deeper understanding of how samples are created in the different countries comparison of results are difficult.
  - (2) Trip classifications: Countries count the basic trip unit very differently – with some collecting rates per person and others looking at total trip rates.
  - (3) Trip purposes and modes: A common list of trip purposes does not exist. With modes, there is greater similarity between countries but yet countries have some differences.
  - (4) Grouping of units: When reporting or collecting information on trip lengths and durations or on ages of respondents, countries are not using the same grouping.
  - (5) Data: Countries do not collect all the same data. This may reflect what they wish to use the NTS for. However, it would be useful if countries could collect a common core set of data that would allow basic comparison of trip patterns.
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