NATIONAL TRAVEL SURVEYS AN ANALYSIS OF EUROPEAN DATA COLLECTION AND TRAVEL STATISTICS

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ABSTRACT

OPTIMISM (Optimising Passenger Transport Information to Materialise Insights for Sustainable Mobility) is an EU FP7 funded project that investigates how national travel statistics are collected and identifies the types of data available which can be used as a basis for deciding transport policies and strategies in Europe (OPTIMISM, 2011). The project has found that National Travel Surveys are collected in a wide range of European countries. The data from these surveys, if harmonised, could provide useful insights into travel patterns of European travel behaviour and country specific differences. In addition it would allow analysing the impacts of different types of policies and infrastructure development with a particular emphasis on sustainable travel and intermodality.

The outcome of the presented assessment shows that there is much variation between the types of data collected by National Travel Surveys across European countries. Purpose and methodologies used to collect data (including sampling of populations, frequency of data collection, types of data collected, etc.) vary significantly across countries.

The results from this research suggest that it has been possible to identify a number of common trends across the collection of National Travel Surveys in terms of trip purposes

and modes. Recommendations arising from this work include the development of a core set of data points by the European Commission and clear methodologies and frameworks put in place for all National Travel Surveys. The use of new technological advances should also be examined for future use, e.g. smart phone technology as with further research into how records from other sources could be used to enrich our awareness of future travel patterns and behaviours.

Keywords: Data collection, National Travel Statistics, travel patterns, national statistics, mobility behaviour

1.0 Introduction

National Travel Surveys are widely carried out in European countries. They provide a very useful tool in terms of providing insight into travel patterns and in helping decision-makers when planning transport systems and transport policy. National Travel Surveys include a wide range of data from travel modes and trip information to specific information about households, vehicle ownership etc.

Within the current context of European and worldwide integration of public and private activities as well as growing environmental concerns, an understanding of respective national transport patterns and interrelations, similarities or disparities within countries has become increasingly important. As no genuine pan-European travel survey is available its national equivalents remain the most important data sources for comparative research. The usefulness of European National Travel Surveys in comparing travel patterns in cross-country comparisons is, however, limited, as different methodological approaches have been used to collect data (Stopher et al, 2006; Agilis, 2011).

1.1 National Travel Surveys

Despite the undisputed value of National Travel Surveys for transport research in terms of basic analysis and subsequent modelling and/or planning of the transport system or for relevant administrations and decision makers, both data collection and usage are facing serious challenges in terms of rising costs and limited financial budgets. In the case of available surveys, the issue of comparability arises in different ways.

At a national level, in many cases multiple surveys have been carried out over a number of years, not always within regular time intervals and sometimes with alterations in methodology. At an international level more emphasis is given to the cross-country comparison of overall transport patterns and main key figures. Besides a general

description, the identification of inherent (national or regional) conditions and the understanding of their respective impact are of particular interest, for example in order to derive best practices of transport management.

In both cases, comparability of data might be limited or even impossible due to the application of distinct methodological approaches based on varying concepts (e.g. the definition of what is regarded as a trip), differing data collection times (e.g. workday coverage vs. seven day week), specific national conditions (e.g. availability of sampling frames etc) or legal restrictions (e.g. data protection regulations, privacy policy).

Several attempts have been made to standardise or at least harmonise both data collection and data preparation. As each attempt has its own particular background and purpose, any resulting guidelines may also vary considerably. In order to illustrate the broad range of these guidelines, a list of potential areas for harmonisation and standardisation covering the whole lifecycle of a survey is summarised in Table 1 (cf. Stopher et al. 2006:19f.).

Table 1. List of potential areas for harmonisation and standardisation

Type of activity	Objective	Examples
Research project (content related)	Harmonised cross-country analysis of particular phenomena,compiling transport data from different countries	KITE (STRATA-GmbH, 2007); LINK (Trip Consortium, 2012)
Research project (methodological focus)	Identification of potential areas of standardisation of survey design and execution; Development of procedures for consistent practice to be required by funding agencies or applied by practitioners	NCHRP project 08-37" Standardised Procedures for Personal Travel Surveys" (Stopher *et al.* 2008; Transportation Research Board of the National Academies, 2012)
Methodological guideline	Recommendations towards harmonised survey design, data collection and preparation	TRB Travel Survey Manual; Kernelemente von Haushaltsbefragungen zum Verkehrsverhalten (BMVBW, 2003)
Network of expertise	Exchange research and information on methodological knowledge and best practices against the background of European integration	COST Action TUD 0804 SHANTI- Survey armonisation with New Technologies Improvement (SHANTI, 2012)
Multi-country travel survey	Contemporaneous and partly harmonised travel survey	DATELINE (SOCIALDATA, 2002)
Survey inventory	Ongoing monitoring of national statistical activities - passenger mobility in the EU27, EU candidate countries, and EFTA countries; Proposal for harmonised data collection on car passenger mobility	EUROSTATS "Support for passenger" mobility statistics project. (Agilis: 2011, 2012a, 2012b, 2012c)

Stopher et al (2008) provided a systematic overview of different areas in which harmonisation of survey methodology and resulting data can take place (see Table 2).

Table 2.Selected activities with respect to the harmonisation of travel surveys and international comparison of national data

Area	Items
Design of survey instruments	Minimum set of questions, standardised categories, standardised question wording
Design of data collection procedures	Number and type of contacts, proxy reporting, complete household definition, sample replacement, item non-response, unit non-response, initial non-contacts, incentives, respondent burden
Pilot surveys and pre-tests	Requirements for pre-tests and pilots, sample size for pre-tests and pilot surveys
Survey implementation	Ethics, mailing materials, respondent questions, caller identification, answering machines and repeated call-back requests, incorrect reporting of non-mobility, recording time of day, time of day to begin and end reporting, creation of identification numbers
Data coding and geo-coding	Geo-coding standards, level of geo-coding to be performed, missing values, use of zero, coding of complex variables
Data analysis and expansion	Assessing sample biases, weighting and expansion of data, missing data imputation, data archiving, documentation
Assessment of data quality	Computing response rates, transportation measures of quality, coverage error, proxy reporting as quality indicator, validation statistics, data cleaning statistics, number of missing values, adherence to quality guidelines

Acknowledging the respective national peculiarities, Eurostat's "Proposal for a harmonised data collection on car passenger mobility" is much more general, promoting a desirable common denominator (Agilis, 2012c: p.46 ff.). It has to be noted, that Eurostat's recommendations focus on car passenger mobility only.

1.2 Research aims and objectives

This paper presents results from the research project OPTIMISM, an EU FP7 funded project that examines optimisation of 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. The particular objectives of the task described in this paper were:

1. To establish what countries are collecting National Travel Surveys,
2. To identify the information and travel data that is collected in National Travel Surveys,
3. To examine how the surveys are designed in terms of classification of data, sampling and survey implementation, and
4. To compare travel data from different countries.

2.0 Methodology

The first step in collecting the data about National Travel Surveys was to define the term 'National Travel Survey' with respect to the project's scope. It was decided that only surveys that fulfilled the following criteria would be deemed National Travel Surveys for the purpose of this work:

1. The survey was national in nature,
2. The latest survey had been conducted within the last ten years,
3. The survey was multi-modal (not focusing on only one mode) and included both motorised and non-motorised modes as well as public and private transport, and
4. The survey included all types of travel (not be limited by trip purpose or trip length).

Following this a pilot survey was designed. A questionnaire was developed with the intention of aiding the design of the final questionnaire. Questions were asked on who collected the data for the National Travel Survey, where data was stored and what data was collected. Partners within the OPTIMISM project attempted to complete the pilot survey for their own countries, using publicly available data. Using the results from this first questionnaire a more substantial questionnaire was designed to collect information from across Europe. This questionnaire contained a number of sections:

1. Basic survey information – giving background details to the survey such as frequency of collection and organisations involved,
2. Data collection methods – giving information on the samples, survey instruments and methodological approaches,
3. Data availability – giving information on who had access to data so far and how that data was used,
4. Type of data – giving information on what was actually collected in the surveys,
5. Quality checks and future surveys - giving information on how the survey could be improved in the future and what future plans existed, and
6. Travel data – selected tables providing trip durations, lengths etc.

The final questionnaire was sent to 30 EU countries and associated countries e.g. Switzerland who were represented in the OPTIMISM consortium (Table 3).

Table 3. Countries to which the final questionnaire was sent

Country Name			
Austria	France	Luxembourg	Slovakia
Belgium	Germany	Malta	Slovenia
Bulgaria	Greece	Netherlands	Spain
Cyprus	Hungary	Norway	Sweden
Czech Republic	Ireland	Poland	Switzerland
Denmark	Italy	Portugal	United Kingdom
Estonia	Latvia	Romania	
Finland	Lithuania	Serbia	

Each partner within the OPTIMISM project was given responsibility to collect the data for at least 2 countries. In order to reduce respondent's burden each partner first attempted to complete the questionnaire by accessing publicly available data and from literature. Following from this, contact was established with the national agency or research institution with responsibility for collecting National Transport Surveys in each country, who were asked to check answers in the survey, fill in blanks and provide examples of data. In some cases interviews were conducted to check data.

Following the exercise, the actual number of countries that was included in analysis was less than in Table 3. This was because some countries were excluded from the analysis as no National Travel Survey matched the definition and criteria set out as above or for some countries the respondents did not send any information. As a result only 15 countries were included in the analysis as set out in Table 4. For all these countries, the questionnaire was completed by the partners and checked by the relevant authorities. The only exception was France where National Travel Survey data was publicly available, but where it was not possible to have an expert from within the relevant agency checking the data. Thus, much of the French data was taken from the Department of Ecology, Sustainable Development, Energy and Commissioner General for the Sustainable Development website (DESD, no date) and from SHANTI (2012).

Table 4. Countries included in the analysis

Country	
Belgium	Latvia
Cyprus	Netherlands
Finland	Slovakia
France	Spain
Germany	Sweden
Hungary	Switzerland
Ireland	United Kingdom
Italy	

3. Results and Findings

The main purpose of this research was to investigate types of data and methods of collection. The results and findings will be described under a number of headings:

1. Purpose of National Travel Survey,
2. Data collection, and
3. Data type.

3.1 Purpose of National Travel Survey

In most countries, it was found that surveys were collected by the national statistics agency. The most common reason for collecting data was found to be "General Data Collection". Policy support, planning support and verifying existing data and straightforward research were other common reasons for collecting national travel data and reflecting this, the most common users of the results of the National Travel Survey were government agencies and policy makers.

Accessibility of National Travel Survey data is confined primarily to government agencies and some researchers in most countries. Few countries made the surveys available to the public. Only Finland, the UK and Germany offered more or less open access of data to the public while others only allow access to the data by government agencies and approved, academic researchers. Table 5 presents a cross-tabulation showing how many countries collect the data for each purpose alongside who the data is actually used by. From this table it is clear that countries that are collecting data to support decisions regarding planning and

policy making are providing that data to policy makers, government agencies and sometimes communities and municipalities. Only a minority of countries provide data to consultancies, industries, transport operators and the media which again reflects that these surveys are generally being used to provide government with better awareness of travel patterns and general travel data and to assist governments and authorities in making better decisions regarding planning infrastructure and implementing transport policies.

Of the countries that allowed access to data outside of government agencies, most of the microdata was either downloaded after registration or produced on a CD which is posted out to the recipient. The most common form of presenting other data is in the form of a written report. Eleven out of the fifteen countries said that they had produced a final written report.

Table 5. Purpose and users of National Travel Surveys (15 countries)

Purpose of survey	General data collection	Policy decision support	Planning support	Research	Verification of existing data
Policy makers	15	12	10	10	6
Government agencies	14	12	10	9	6
Researchers	14	11	8	10	6
Communities/ municipalities	10	8	8	7	5
Consultancies/ Industry	5	4	5	5	2
Transport providers	4	3	5	4	3
Media	5	4	2	4	2

3.2 Data Collection

There were significant differences in terms of how often and when the latest surveys had been conducted for each of the countries, which limits comparisons of the data. Table 6 shows the last date of survey for each of the 15 countries analysed, along with the frequency of data collection. Most surveys are no older than four years but frequency of collection varies. Four countries collect data annually. Of these Cyprus will no longer collect the survey annually in the future due to shortages of financial resources.

Table 7 presents the sample size and sampling approaches taken in the different surveys. The sampling unit used in the National Travel Surveys were either household or individual or both. Household samples ranged from 1,000 households (Hungary) to 31,950 households (Switzerland) and 1200 individuals (Slovakia) to 60,713 individuals (Germany). Several

approaches were found to be used for choosing samples. These varied in terms of complexity and number of stages. Sampling approaches included random sampling, stratified sampling and multi stage sampling.

Table 6 Data collection year and frequency

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 ten years approximately
Germany (MiD)	2008	Irregularly
Hungary	2009	Irregularly
Ireland	2009	The National Travel Survey has only been collected once. Further surveys planned but no details available.
Italy (ISFORT)	2011	Since 2000 each year quarterly
Latvia	2003	Once
Netherlands	2011	Annually
Slovakia	2011	Quarterly
Spain	2007	Irregularly
Sweden	2006	Next survey 2011-13 - but data collected annually. 2007-10 no surveys. Annually from 1994 until 2001. Fourth quarter 2005, Third quarter 2006
Switzerland	2010	5 years
United Kingdom	2010	Annually

*N.B. In Germany a second National Travel Survey called "Mobilitaetspanel Deutschland" (MOP) is carried out annually. In contrast to any other National Transport Survey analysed within the given context, the MOP survey is designed as genuine panel and therefore excluded from further analysis. All statements regarding the German National Travel Survey are based on MiD.

Comparison of data from the National Travel Surveys will therefore be very difficult given that samples are of different sizes and selected very differently across countries. Most surveys were cross-sectional, one time-surveys and were usually distributed by conventional mail with only 2 countries using GPS devices to collect travel data.

Table 7. Sampling size/units and sampling approaches

Country	Sample size/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.
Germany (MiD)	25,922 households , 60,713 individuals	Two stage random sampling/geographically stratification. Sampling was taken at community level by communal registration offices. Sampling units: individuals aged 14+, registered as resident.
Hungary	1,000 households, 25,000 individuals	Sample from a tourism survey of Hungarians.
Ireland	7,245 households, 7,221 individuals	A three stage sample design was used. 1) 2,600 small areas were selected at county level to reflect population density. Each area contained 75 dwellings. The sample of area is fixed for 5 years for the QNHS. 2) 15 households were surveyed from each area 3)From each of the 15 households, 1 person aged 18 or over was randomly selected to participate in the model.
Italy (ISFORT)	1,5000 individuals	Persons aged between 14 and 80 years were sampled and the sample stratified by sex, age classes, demographic size of municipalities and region. Regions with fewer inhabitants are oversampled to reach a minimum of 400 observations.
Latvia	2,476 households, 6,208 individuals	Stratified random sampling.
Netherland	43,400 individuals	Sampling frame of CBS. Each year a new sampling frame is created. The target population consists of all resident living in the Netherland, in a private house and registered with the GBA.
Slovakia	1,200 individuals	15 year and over.
Spain	49,027 household, 55,955 individuals	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

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Most surveys were distributed by mailing of the survey to respondents and most surveys consisted of written travel diaries and surveys. Two countries collected data from GPS devices and two used computer programmes. Some data will always need to be collected in the form of interviews or questionnaires. However, the lengths of questionnaires could be shortened and the quality of data improved if countries made use of more innovative techniques and technologies to collect some information about journeys. For example smart-phones and GPS devices could be used to collect factual information about trip lengths, durations and destinations, thus reducing the reliance on respondent "recall". National Travel Surveys could involve two elements: using technology to collect quantitative transport data and using diaries and face to face interviews to collect more qualitative data that would enrich the quantitative data and understanding of travel behaviour.

Table 8 shows the range and groupings of ages that are classified for the National Travel Surveys. Six of the fifteen countries used age 6 as the youngest age at which respondents would be included in the survey. This may be because the age at which children enter formal education in many countries in Europe is 6. Accordingly this means that the family or household will begin to make journeys where the primary purpose of the trip is for the child rather than for the adults. Three countries included all age categories. Four countries did not include children in the survey, each using a different age to determine when respondents could be included in the survey (UK-starting at 17, Ireland at 18, Slovakia at 15 and Italy at14).

Table 8. Age groupings

Country	Age groupings
Belgium	0-12, 13-18, 19-59, 60-99
Cyprus	Below 14, 14 17, 18-25, 26-50, 51-65, 65 and over
Finland	6-17, 18-34, 35-54, 55-64, 65 and over
France	There is no grouping of age (single years from 0 +)
Germany (MiD)	There is no grouping of age. (single years from 0 +)
Hungary	0-14,15-24,25-44,45-64, 65 and over
Ireland	18-24, 25-34, 35-44, 45-54, 55-63, 65 and over
Italy (ISFORT)	14-29, 30-45, 46-64, 65-80
Latvia	6-18, 19-24, 25-50, 51-61, over 61
Netherlands	0-5, 6-11, 12-14 (ending with the category 80 years and over)
Slovakia	15-24, 25-44, 45-64, 64 and over
Spain	Below 14, 15-29, 30-39, 40-49, 50-64, 65 and over
Sweden	There is no grouping of age.
Switzerland	There is no grouping of age.
United Kingdom	16-18, 19-25, 26-30, 31-40, 41-50, 51-60, 61-70, 71-80, 80 and over

Table 8 also shows that only respondents who were 80 or under were included in the Italian National Travel Survey and only those who were 84 years or under were included in the Swedish National Travel Survey. The remaining thirteen countries did not appear to have age cut off point at the upper level according to the responses in the questionnaire. However, when asked about how they grouped ages in reporting of travel statistics, Belgium did not include an age grouping over 99.

It is important to note the different cut off point as this will lead to different counting of trip purposes. For example countries which do not include children may have fewer education trips counted than those countries that do include children.

National Travel Survey data includes profile data of the survey respondent (Table 9). Socio-demographic a n d socio-economic information such as gender, age and household information are collected as part of the National Travel Survey. All fifteen countries collected data on gender, age, 66% collected data on education level and 27% on usual working hours.

Table 9. Summary of percentage of countries in the survey who collected socio-demographic and socio-economic information

% of countries collecting data						
Gender	Age	Education level	Driver *l*icense (car)	Employment status	Usual working hours	Family composition
100	100	66	73	80	27	73

3.3. Data Type

Table 10 outlines the modes that are included in the survey. All countries include walking, motorcycle, cycling, car, bus/coach as modes of travel. Many also include different forms of public transport, like train or metro, depending on what mode of public transport is available in their country. There are some examples of modes which are particular to specific countries (for example snow scooter in Finland) which do not appear in the lists of other countries for obvious reasons.

Table 11 shows information on trip length, trip duration, trip purpose, modal choice, number of trips per day, passenger kilometres and vehicle kilometres. All of the fifteen countries collected data on trip duration, trip purpose, modal choice and number of trips per day. Only 47% of the countries collected information on vehicle kilometres. However, other countries may collect some of this data in other ways, other than in a National Travel Survey. For example, the Netherlands do not collect vehicle kilometres in the National Travel Survey but do so using other data collection tools.

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Table 10.   Modes of travel (Number of modes used in the National Travel Surveys (Total = 15))

Mode	(No)	Mode	(No)	Mode	(No)
Walking	15	Ship/ferry	11	Taxi	2
Motorbike	15	Plane	11	Rollerblades/Skates	2
Car	15	Other	6	Snow mobiles	2
Bicycle	15	HGV	3	Caravan	2
Bus/Coach	15	Van	3		
Train	14	Tractor	3		
Tram/metro	13	Moped	2		

Table 11. Trip details (%) for countries surveyed

Trip length	Trip duration	Trip purpose	Modal choice	Trips per day	Passenger km	Vehicle km
100	93	100	100	100	73	47

The second part of the trip data collected from the surveys examined the measurement of how trip lengths are presented. The collection of data showed that the range and data format for reported trip lengths varied largely. As a result, it was not possible to compare responses. Some countries recorded trip length as km/day, others gave a range of km travelled (the Netherlands, Latvia, Ireland) whilst others gave trip length per purpose or mode. The UK used the imperial system for measurement e.g. miles. The most common way of recording trip duration is minutes, although as in the previous table the groupings of data recording could not be compared. Ireland Latvia, the Netherlands and the UK all collected data in groupings but each country had different groupings.

Most countries do not collect data on house type or parking space availability at work while just over half collect information on parking availability at home. Parking data may be something that local authorities and municipalities have a greater interest in than national organisations as information on parking data may in the future become more relevant due to an increased use of sustainable transport modes (e.g. electric vehicles). The use of these modes will impact upon future parking policies and planning where public charging posts may be a future feature of our urban environment.

Table 12 shows that data on car and bike ownership is collected by at least 80% of the countries. Only 20% of surveys asked for information on CO_2 emissions and 53% on fuel type. This is interesting to note as if impacts of policies on sustainable travel and emissions are to be examined. It is important to collect data on the CO_2 emissions of current travel patterns.

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Table 12. Vehicle ownership and use (Total %)

Cars owned per household	Fuel type	CO$_2$ emissions	Bicycle ownership	Bicycle use
86	53	20	80	66

4.0. The use of National Transport Surveys for sustainable transport policies

Although significant differences between National Travel Surveys across European countries exist, this does not diminish the possible use of these surveys and the data collected for policy makers. In particular for the collection of information leading to in-depth analysis of raw travel data, National Travel Surveys can prove valuable instruments. This is for example the case when policies on sustainable transport are selected by administrations and policy makers.

Sustainable transport is one of the elements that stands high on policy makers' agendas. An example is the European Commission's Transport White Paper. Within the OPTIMISM project, the enhancement of sustainable passenger transport is an important focal point as well as the presentation of a possible standardised National Travel Survey. A standardised survey allows for the selection of a set of interest topics (ie. policy goals) for which a data collection methodology can be proposed. For these topics, data requirements for a sound analysis can be formulated and appropriate data collection methodologies selected.

An example is the proposition for a standardised National Travel Survey made within the OPTIMISM project. Based on an accepted policy paper (the European Commission's Transport White Paper), a set of clearly outlined goals that are directly or indirectly linked to passenger transport can be identified. These can be broadened based on information from other accepted policy papers (i.e. national policy papers, other agencies such as the European Environment Agency, etc.). As a result, a set of key objectives and actions required for sustainable transport could be identified. In turn, these objectives allow for the identification of 60 parameters that are required to fully analyse the outcome of policy measures in relation to these objectives.

Once such a list of parameters is composed, the decision on the usage of appropriate data collection methodology can be made. For a selection of parameters, National Travel Surveys can be considered an appropriate method. This is in particular the case when qualitative information is collected or when a fully representative sample of the target population needs to be contacted. For other parameters, different methodologies or data sources can be considered. This is for example the case for detailed trip information (ie. GPS and usage of Smart phone) and background information (ie. road infrastructure network, vehicle emissions, etc.).

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5.0 Conclusions

The National Travel Surveys were managed by government agencies which on most occasions were statistical agencies. Survey results were used for policy making and government decision making. Access to data was also found to be an important issue where some data was only available to selective audiences and other data incurred charges for commercial or non-commercial bodies. Some countries did not allow open access to data such as Cyprus, Hungary, Ireland, Italy, Latvia and Slovakia. For individuals it was found that data was not easily available. The availability of data will need to be addressed if a cross-national survey is to be developed. Given that countries may have their own data protection legislation this is a topic that requires further investigation and it would be useful to explore why some countries state that there are legal and privacy issues relating to sharing data, while others seem to have surmounted these issues.

Comparing National Travel Surveys across the 15 countries surveyed was difficult. The range and classification of age groups varied. Age groupings not only varied but collection ranges were different. For example, Germany collected all ages whilst Italy collected those aged between 14-80. A more consistent methodology for age range would make analysis more purposeful as comparisons could be made across the countries.

Most sampling approaches were either random or stratified. Some countries such as Italy surveyed persons according to their sex, age, size of region whilst other countries (for example Ireland) sampled areas based upon criteria of population density and those over 18 years old.

The baseline for the surveys was inconsistent. The last date of survey varied from 2003 to 2011. The large range of survey years means that comparing data over such a wide time frame would be difficult to perform since it would have to take into account underlying changes (demographic devolutions introduced or amended legislations etc.) Also the frequency of data collection was quite different with some countries carrying out National Travel Surveys every year, some carrying them out quarterly and others carrying them out irregularly at an interval of several years. The baseline time frames for data collection were simply too inconsistent to compare and this would need to be resolved and common time frames agreed to enable comparability of data across the European region.

There is still considerable reliance upon the use of paper based surveys. The use of technological methods such as the integration of GPS information was only used by one country which was France. Technology such as the use of smartphones to track travel patterns could be a very useful tool. There may be issues around data protection and privacy but if these were addressed then the future use of technology for collecting some of the travel data collected in these surveys could simplify survey methodology, improve data reliability and reduce time taken up for the participants in completing the surveys. On the other hand the use of technology can skew data in that it is not used by a significant proportion of the population e.g. elderly, the very young, those on low incomes. However the use of technology and ICT to collect some travel data should be explored in future research.

The recommendations from this survey concluded that harmonisation of National Travel Surveys in Europe is problematic under the current survey methodologies and approaches. Different baseline years, methodologies and types of data collected range considerably over the European Union and are therefore difficult to compare. It is recommended that a consistent system is developed and agreed by member states and that a core set of data points are developed in order that transport movements and trends can be analysed and used as a basis for future European and national policies.

The use of new technologies should also be encouraged and developed to improve data collection and accuracy. Exploring these new technologies can enrich our awareness of travel patterns and travel behaviour and ensure that future policies are developed on solid foundations of data collection.

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