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Youssefzadeh, Maria; Axhausen, Kay W. 

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# **METHODS FOR IMPROVING RESPONSE RATES AND DATA QUALITY IN LONG-DISTANCE TRAVEL DIARIES**

Maria Youssefzadeh  
Kay W. Axhausen  
Leopold-Franzens-Universität, Innsbruck

## **1. INTRODUCTION**

European transport policy is rapidly expanding its scope. Especially the Transeuropean Networks, but also other transport initiatives, such as Transport Telematics, and regional policies require data of a uniform and high quality across Europe to give policy makers the opportunity for sound decision making.

While many databases can be built up from existing sources, it will be virtually impossible to do so for a European travel behaviour database. The reasons for this are the very different approaches, which are taken across Europe to the collection of long-distance travel behaviour data.

### **1.1. State-of-practice**

A review of long-distance travel surveys undertaken in various countries across Europe showed that the methods used for sampling, the survey instruments, protocols, and units were different in all countries, so that it is virtually impossible to merge the collected data to a European database (see Table 1). The comparison of these methods leads to the conclusion that not only cultural differences in terms of the instruments and protocols used, but also different cost-efficiency calculations across Europe have to be considered.

### **1.2. Importance of pre-testing**

The European Union transport policy follows the aim of assuring economical and personal mobility for the residents of its member countries while trying to cause the least possible environmental damage. Despite this common goal every single member country naturally tries to maximise their benefit and minimise their costs.

A database providing neutral information about travel behaviour in all member countries of the European Union would be of great value in terms of reaching the above mentioned aim by supporting policy makers with a reliable instrument for decision making.

Naturally one is tempted to assume that a survey instrument developed and tested in one country only needs to be translated into other European languages and the instrument can be used equally across Europe. In fact language differences represent some of the smallest barriers on the way to developing a harmonised survey instrument, which is, as the project outline points out, "understandable across Europe"

and successful in terms of its reliability, its accuracy, in terms of capturing the correct data, its validity and its cost-efficiency.

Still cultural differences have to be considered in the approach to the respondents. This affects the design of the survey instrument, i.e. the contents of the questions and their order and the layout in which they are presented. Questions that present no threat or intrusion to one culture might be rejected by another (Sudman and Bradburn 1982). But also the survey protocol and the data collection method might lead to different response behaviour in different European countries.

People in some countries perceive surveys in general and telephone surveys in particular as an intrusion into their private lives, which is partly due to the over-surveyed society well observable in the UK and partly in France. Others are happy to reply to questions as long as they are not approached in person but only on paper, whereas respondents in Southern European countries seem to prefer the personal contact with an interviewer to a selfcompletion mail survey. In terms of sampling every country has their own regulations and possibilities, which have to be considered. Data protection laws vary in each country and can cause problems for a European survey, if they are not followed. So translating survey forms is not a sufficient way to produce a survey, which would be "understandable" and efficient in its costs and results.

To develop a survey method, which provides comparable data of high quality the similarities and differences of respondents in different countries to surveys have to be observed, measured and implemented in one instrument. The importance of pre-testing has been repeatedly stressed by experienced survey researchers (see Richardson, Ampt and Meyburg 1994). Seymour Sudman and Norman Bradburn even recommend: "If you don't have the resources to pilot-test your questionnaire then don't do the study!" They also stated that "even after years of experience, no expert can write a perfect questionnaire". (Sudman and Bradburn 1983)

The European Commission has realised this necessity and commissioned the project MEST (Methods for European Surveys of travel Behaviour) to develop and test suitable methods for the collection of high quality travel behaviour data across Europe. At the same time EUROSTAT, the statistical office of the European Union, has been co-ordinating studies to test a common set of definitions for long-distance travel diary surveys (EUROSTAT 1995 and Axhausen 1998).

Table 1: Long distance travel surveys in Europe (with subjects, definitions, data collection mode and survey form)

<b>Name</b>	<b>Country</b>	<b>Subject</b>	<b>Definition</b>	<b>Data Collection Mode and Survey Form</b>	
Verkehrsbefragung	Austria	All trips	>50 km	Household	Self-Completion
Enquête Transports et Communication	France	All trips	>100 km	Household	Self-Completion/Personal Interview
National Travel Survey (1985)	Norway	All trips	>100 km	Household	Personal Interview
National Travel Survey	UK	All trips	>50 miles	Household	Personal Interview
Long Distance Travel Survey	UK	All trips	>25 miles	n. a.	n. a.
Mobility	Germany	All trips	>100 km	Household	Personal/Telephone Interview
National Travel Survey (1992)	Norway	All trips	>100 km	Household	Telephone Interview
RVU	Sweden	All trips	>100 km	Household	Personal Interview
Riks-RVU	Sweden	All trips	>100 km	Household	Telephone Interview
Enquete aux Frontières	France	All trips	passing border	Intercept	Personal Interview
Inquérito ao movimento nas fronteiras	Portugal	All trips	passing border	Intercept	Personal Interview
Inquérito ao movimento nas fronteiras	Spain	All trips	passing border	Intercept	Personal Interview
International Passenger Survey	UK	All trips	passing border	Intercept	Personal Interview
Suivi de la Demande Touristique	France	All trips	>1 overnight stay	Household (Panel)	Self-Completion
Inquérito sobre as ferias	Portugal	Holidays	>4 overnight stays	Household	Personal
United Kingdom Tourism Survey	UK	Holidays	>1 overnight stay	Household	Personal
British National Travel Survey	UK	Holidays	Holidays	Household	Personal
Business Traveller Panel	UK	Business	Business trips to Continental Europe	Person (Panel)	Self-Completion

(Source: Youssefzadeh and Axhausen 1996, p. 4)

### 1.3. Project Outline

The aim of European Union funded project MEST (Methods for European Surveys of Travel Behaviour) has been to develop long-distance surveys, which are understood across Europe, and so provide the required *benchmark* for the other surveys. The project is structured into three parts:

1) *Preparatory works, concepts and reviews*

This brief element reviewed the current state-of-practice and of the art and identified the areas of interest and of supplementary data sources. Its synthesis defined the scope and content of the instruments to be developed and the measures of survey quality to be used throughout the project (Youssefzadeh and Axhausen 1996 and Axhausen 1996)

2) *Development of the new long-distance travel diary*

This stream was divided into:

- Research into the understanding of the respondents of the questions asked, in particular of newly added questions. This was in parallel with research into cost/quality trade-off available by different styles of survey administration and design.
- First wave using a variety of designs bringing together the results of the review.
- Synthesis of the first wave, revision of the instruments and experimental design of the second wave.
- Second wave focussing especially on the intercultural and multi-language aspects of survey design, as well as on the cost-efficiency questions.
- Synthesis of the second wave and the design and implementation of a final third wave of pilots.

3) *New methods and technologies to support the travel diaries:*

This stream groups together research into innovative methods to administer, code, weight, correct and publish travel diaries (see Armoogum, Herry, Madre and Polak 1996 or Armoogum, Han, Madre and Polak 1998). Themes such as sampling schemes, correction and weighting methods are addressed. Some of the envisaged results can be applied immediately, while others will identify future trends. This work is extended in the project Technologies of European Travel Behaviour, undertaken by the same consortium, covering further technology oriented projects.

In order to collect information from different cultures, four countries Sweden, France, Portugal and the UK were chosen, where the pilot surveys should be undertaken.

The initial survey instruments were designed by the MEST consortium (see acknowledgements) and was produced in Innsbruck. A series of three pilot survey waves were then undertaken by successful bidders among local survey firms, that were known to have sufficient experience in the transport field. The MEST consortium partners in the respective countries kept in close touch with the companies and provided support and served as a link to the project co-ordinator.

Figure 1: Schedule of the pilot surveys

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1996												
1997												
1998												

## 2. FIRST WAVE

The contents of the two types of activities to be undertaken in the first wave of pilots were defined based on the review of the current state-of-the-art and –practice in Europe (Youssefzadeh and Axhausen 1996 and Axhausen 1996) and the extensive discussions of the first project workshops:

- Pilots surveys in Sweden and Portugal
- Cognitive laboratory type exercises in the UK and France.

As a starting point for further tests and improvements a travel diary was designed which was partly based on the experiences of the Austrian EUROSTAT pilot surveys (Axhausen, Köll and Bader 1996). So the instrument as well as the protocol had been successfully tested and provided a solid basis for comparison and further improvements.

### 2.1. Pilot surveys

#### *Design and Protocol*

The first wave of the development of the benchmark survey included initial person-based pilot surveys carried out in Portugal and Sweden based on the following experimental factors:

- Country (Sweden/Portugal)
- Temporal orientation (prospective/retrospective)
- Data collection method (selfcompletion/telephone)
- Respondent workload ("small" question set/"large" question set)

The eight of 16 possible combinations, which were tested are shown in Table 2:

Table 2: Experimental design of the first wave

Country	Orientation	Method	Workload
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Sweden	Prospective	Selfcompletion	Small set
Sweden	Prospective	Telephone	Large set
Sweden	Retrospective	Selfcompletion	Large set
Sweden	Retrospective	Telephone	Small set
Portugal	Prospective	Selfcompletion	Large set
Portugal	Prospective	Telephone	Small set
Portugal	Retrospective	Selfcompletion	Small set
Portugal	Retrospective	Telephone	Large set

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In the prospective surveys the respondents were given a paper instrument, called a memory jogger, providing the possibility to make short notes about the undertaken long-distance journeys (telephone interviews) or the survey form (selfcompletion) at the beginning of the survey period, while the retrieval/return occurred six weeks later. In the case of the retrospective survey the respondent was queried about prior journeys.

The "small set" and the "large set" concerned the amount of detail enquired about the household and the travel activities. The remaining possible dimensions, which could be varied and would have an effect on response behaviour and data quality, were fixed as follows:

<b>Survey object:</b>	All stages of journeys, involving at least one destination further than 100 km from the current base of the respondent. Tours within the destination area do not need to be reported.
<b>Survey period:</b>	(reporting period): 6 weeks
<b>Overall approach:</b>	Stage-based (i.e. movements with one mode); with some journey level questions (i.e. questions regarding the whole movement from home and back home)
<b>Minimum distance:</b>	100 km from current base/reference location
<b>Minimum duration:</b>	none
<b>Temporal directions:</b>	prospective and retrospective
<b>Geographical range of exclusion:</b>	none
<b>Survey package:</b>	household questionnaire (including questions concerning the household, its members and the vehicles owned by it)
<b>Explanatory material:</b>	separate explanatory booklet plus brief explanations on the journey form
<b>Data collection method:</b>	mail-out and telephone
<b>Incentives:</b>	None
<b>Destination area:</b>	municipality or urban area
<b>Reference location:</b>	Any destination, where the respondent stays for more than one consecutive night.

The household questionnaire was designed in landscape format (A3 folded to A4) allowing enough space for socio-demographic information about all household members and the characteristics and usage schemes of vehicles owned by the household.

The stage-based travel diary adapted a column design in portrait format, with three columns per A4 page, familiar from the KONTIV-design (Axhausen 1995). The six available columns were allocated to one column of journey-level questions and five columns for each stage. The sample was to be drawn randomly from a population aged between 15 and 75 living in an urban area. The respondents had to be reachable by phone.

The survey protocol for the mail-back prospective surveys consisted of the mailing of an announcement letter, containing information about the purpose of the survey, the survey package and two reminders in postcard format during the survey period and two written reminders after the survey period. The sample participating in the retrospective survey received an announcement letter followed by the survey package and a maximum of two written reminders if necessary after the survey period.

The written element was followed by phone calls to respondents as well as nonrespondents. Respondents were queried about their experiences with the survey and the dates when the survey was completed. On this occasion corrections to obvious mistakes and item nonresponse were made and it was also probed about any further journeys that had been omitted. Nonrespondents were asked about their reasons for not responding. The interviewers were instructed to probe for some basic information about the household and the journeys undertaken. A question about the household income was placed at the end of each telephone interview.

The participants in the prospective telephone interviews received an announcement letter and a memory jogger. They also received two postcards reminding them of noting their journeys during the survey period. At the end of the six-week survey period the telephone interviews were undertaken. The retrospective survey sample received an announcement letter and a memory jogger to note their journeys undertaken in the preceding six weeks, prior to the telephone interviews.

## **Results**

Surprisingly in Portugal 70% and in Sweden 54% of the respondents completed a telephone interview with the same contents as the paper instrument. The response rate of the selfcompletion mail surveys were about 28% in both countries not including the respondents contacted in the follow-up interviews. The responses were raised considerably by the interviews with the nonrespondents, of which a very high percentage was willing to participate in the telephone interviews. They provided some basic information on their journeys and their socio-demographics. As the follow-up interviews were more successful than previously expected, it was decided that for the next wave of pilots more detailed information would be collected from the respondents.

The percentage of respondents who had undertaken at least one long-distance journey was considerably higher in the mail-back survey than in the telephone interviews. One reason for this is that respondents feel that a travel survey is not relevant to them, if they have not travelled, even if the instructions on the forms and the announcement letter state the opposite.



## 2.2. Cognitive Laboratories

### *Scope*

The application of cognitive psychology to the study of survey measurement error is now well established in many areas of market and sociological research (see Sudman, Bradburn and Schwarz, 1996 or Tanur and Fienberg 1992). Unfortunately many designers of travel surveys, in contrast to psychologists and sociologists, still believe to be perfectly aware of people's response behaviour and therefore do without any thorough pre-testing of their survey instruments.

As part of the first wave of MEST pilot surveys extensive pre-testing of the instrument as well as the concepts that lie behind travel diaries in general was undertaken. Respondents of interviews are told that the researcher is not only interested in their answers but also in the methods used to arrive at them. The respondent is therefore asked to "think aloud" or "talk aloud" while retrieving the answer from his/her memory. The interviews are either audio- or videotaped giving the researcher the opportunity to see which areas of the questionnaire are difficult to the respondent and which areas are answered with ease. The actual time of retrieval and possible misunderstandings of concepts can be measured. Respondents in this kind of exercises provide the researcher with invaluable information about the quality of the designed survey instrument.

The work in this part of the MEST project carried out in France and the UK consisted of two elements for each respondent:

- a pre-test of one of the two currently used survey forms involving think-aloud protocols, respondent observation and discussion in a laboratory setting:
  1. "long" form
  2. "short" form
- three out of five smaller task-oriented surveys highlighting particular and problematic aspects of travel diary surveys; again to be performed in a laboratory setting preferably in the respondents' homes:
  1. *Explaining the stage* – respondents had to divide hypothetical journeys, described in little stories or drawn on maps into stages according to the given explanation of the concept of stage.
  2. *Capturing activities* – paraphrased description of activities had to be assigned to the categories in the questionnaire
  3. *Car availability* – three types of questions about respondents' car availability were tested: an added page to the person form requiring detailed responses, an added question to the person form and a question about car availability on each stage of a journey added to the travel diary
  4. *Capturing the route* – respondents were asked to remember recent car journeys, filling in an alternative travel form asking about "bigger towns passed" or "major junctions and important roads" or public transport journeys, completing a travel diary with an added question about "main

- points along the route"
5. *Capturing the mode* – descriptions of modes were to be classified against the mode codes provided on the "short" and the "long" form

## **Results**

### ***Questionnaire Pre-tests***

One of the major complaints of the interviewees were difficulties with the readability due to the relatively small fonts. It has to be pointed out that the target population of the EUROSTAT survey in Austria, of which the questionnaire design used had been considerably younger (between 15 and 45) than the sample for the MEST pilots. The respondents assessed the following tasks as very important:

- a consistent layout, making clear whether a number, a written reply or a cross was required
- a clear and easy guidance through the columns of the travel diary
- a category "not applicable" and the opportunity to give further written descriptions in case of use of the category "other"
- the possibility of multi-ticking for several questions
- a larger number of categories to choose from (preference of the long forms).

The interviewees tended not to read the explanation booklet in advance, but rather used it as a reference when they had difficulties in understanding a question.

### ***Explaining the stage***

The exercise showed that there were no learning effects, i.e. respondents easily completed the forms for the invented journeys, but had difficulties dividing their own journeys afterwards into stages.

Other results were the effect of repetitiveness, which led to a decrease in the level of detail with the number of stages to be described. The think-alouds also proved that respondents considered short stops en route for any purpose as irrelevant and did not report them. This information about the perception of the importance of information can be very useful in the judgement of reasons for item nonresponse.

### ***Capturing activities***

Again in this exercise most respondents wished to have the possibility of multi-ticking of categories that have to be unambiguous and mutually exclusive.

### ***Car availability***

Public transport users considered the whole question as irrelevant and tended to skip it. In the UK context it proved to be more efficient to ask a question related to the terms of insurance as every driver's name has to be mentioned in the insurance contract.

### ***Capturing the mode***

Again the respondents showed a clear preference for the more categories, which have to be mutually exclusive. Also all categories should be clear to every one, even if they have not used it. Terms such as charter vs. scheduled or IC/EC trains are not understood by everyone.

### ***Capturing the route***

The exercise proved to be especially successful with car drivers who almost without

exception had a perfect knowledge of the roads used and who had no difficulties in explaining their routes. Whereas in domestic travel the interviewees remembered the major roads better, in the case of international travel the question about bigger towns passed was easier to reply to.

### 3. WAVE 2

The discussions within the project and the experiences of the first wave of pilots defined the contents of the second wave of pilots, which focussed on the issues of:

- Effects of trip versus stage reporting
- Effect of page versus column presentation of survey
- Effect of survey duration (4 and 8 weeks)
- Cultural effects (UK, Portugal, France, Sweden)

These variables had not been tested in the first wave and were deemed to be important and being an area of lack of knowledge and experience.

The pilot surveys were carried out in Portugal, France, the UK and Sweden. The following eight of the possible 32 combinations were tested:

Table 3: Experimental design for the second wave

Country	Design	Layout	Survey period
Portugal	Stage-based	Page-based	4 weeks
Portugal	Trip-based	Column-based	8 weeks
UK	Stage-based	Column-based	8 weeks
UK	Trip-based	Page-based	4 weeks
France	Trip-based	Page-based	8 weeks
France	Stage-based	Column-based	4 weeks
Sweden	Trip-based	Column-based	4 weeks
Sweden	Stage-based	Page-based	8 weeks

The surveys were carried out in a retrospective way, which means that the respondents received an announcement letter followed by the survey material after the survey period. Two written reminders followed the mailing of the survey material to the nonrespondents. Like in the first wave follow-up telephone interviews were undertaken with respondents and nonrespondents.

The remaining possible dimensions were as follows:

<b>Survey object</b>	all trips of journeys, involving a destination further than 100 km from the current base of the respondent.
<b>Approach</b>	Stage-based/trip-based
<b>Minimum distance</b>	100 km - crow-flight-distance
<b>Minimum duration</b>	None
<b>Temporal directions</b>	retrospective
<b>Geographic range of exclusion</b>	none
<b>Temporal range of</b>	none

<b>exclusion</b>	
<b>Other exclusions</b>	The design should help the respondent to abbreviate the description of repeated journeys
<b>Stage/trip/journey detail</b>	See above
<b>Household instrument</b>	Combined with person and vehicle instrument (A3 folded)
<b>Person instrument</b>	Combined with household and vehicle instrument (A3 folded)
<b>Vehicle instrument</b>	Combined with household and person instrument
<b>Journey instrument</b>	Common instrument for all the selected persons Mail out/Mail back: A4 form
<b>Explanatory material</b>	separate explanatory booklet plus explanations on the journey form (A3 folded)
<b>Form of contact</b>	mail out
<b>Incentives</b>	none
<b>Destination area</b>	municipality or urban area
<b>Reference location</b>	any destination, where the respondent stays for more than one consecutive night

### 3.1. Changes and improvements in the second wave

#### *Survey instrument (general)*

The design of the stage-based travel questionnaires, which had been tested in the first wave of pilots, was varied in a way to facilitate the respondents to read and understand them. Also many changes were made in the content of the questions and the categories offered. These changes based on the results of the cognitive laboratories of the first wave (Wofinden and Scott, 1997)

#### *Household questionnaire*

The results of the first wave of pilots suggested to use the long set of questions and thus collecting more socio-demographic information about the respondents and their household members as the respondents neither in the cognitive laboratories nor in the pilot surveys seemed to mind the larger amount of questions.

The long questionnaire was improved in design and some of the questions were reworded in order to make them less ambiguous and clearer.

#### *Travel Questionnaire*

As an alternative to their presentation in columns a page-based design was developed that should give an easier overview of the questions and answering categories even for aged respondents. Especially the page-based, but also the column-based questionnaire was improved in terms of readability. Larger fonts and only two columns per page were used, which also facilitated the guidance through the forms.

The parts concerning journeys and trips/stages were clearly separated so that less confusion could result regarding the different concepts. Also the question order was varied and was then more in line with the way people stated to remember their journeys. To increase the involvement of the respondent in the survey and lower the repetitiveness, the respondents were asked to give each of their journeys a name. This was also done to evaluate how people remembered their journeys and which clues

they use to retrieve information about journeys from their memory.

The problem of memory decay and the respondents' difficulties and unwillingness to remember detailed information about past journeys was addressed in two ways. First the recall period was varied. There were two alternative periods of 4 and 8 weeks. Second a completely new designed trip-based questionnaire was developed, which was presented in two versions: column-based and page-based.

### **3.2. Results**

The main issue studied in the second wave of pilots was the quality of the survey instrument. Respondents in general felt more comfortable with the improved design. The explanation booklet was easier to use and the layout of the questionnaires allowed for a very good readability and enough space for written replies.

Respondents still proved to have difficulties with dividing their journeys in trips or stages. The main problem was the omission of return trips/stages to the origin of the journey, which most respondents either simply forget or perceive as being irrelevant, although the instructions on the forms repeatedly ask for the inclusion of the returns back home. In these cases and in cases where responses were not clear or wrong or individual questions were not answered, the follow-up interviews proved to be very helpful. Especially as in all four countries a very high percentage of the respondents, who had already completed the forms were willing to participate in a telephone interview.

Clearly the page-based layout of the travel diary was the preferred one by the respondents. The trip design was assessed as being less repetitive and easier to complete. The separation of records on journeys from the records for trips and stages entailed in them was extremely successful. Journeys were omitted only in a minority of cases. Respondents felt that giving a journey a "name" was a good idea. Also the results of the analysis of the journey names used proved that vast majority of respondents used either the destination or the purpose as brief description of their journeys. This result supports the newly implemented question order, where purpose and destination are the first questions asked instead of the more common order in travel diaries, which starts with origin and departure time, continuing with travel mode and purpose, before a question about the destination is asked. Meyburg (1997) recommends designers of travel surveys to "provide logical and intuitively obvious sequencing of blocks of questions and questions within such blocks" without "forcing the respondent to make mental jumps". The questions on the travel form were divided in three blocks, of which the first one collected information about what respondents showed to assess as most important, which is the destination, the purpose of the trip and whether it was a day trip or overnight stays were included. The second block queried the way the respondents reached their destination: the travel mode and difficulties encountered. The third block contained questions about the cost of the trip, divided by travel expenses and costs of overnight accommodation.

Overall, item nonresponse was considerably lower than in the first wave of pilot and resulted mainly from the failure to record zero or "not applicable". Missing responses in the household form resulted mainly from respondents' difficulties in comprehension, especially of questions where the distribution of costs was required, the respondents assessing questions irrelevant and a lack of knowledge of information

concerning other household members.

#### **4. THIRD WAVE**

The final wave of pilots based on three elements:

- One identical benchmark survey instrument in all four countries
- One additional test survey in each of the four countries
- Cognitive Laboratory pre-tests of the main survey instrument and

##### **4.1. Cognitive Laboratories**

Before the surveys were undertaken cognitive laboratory interviews were carried out in Sweden and Portugal. They resulted in some changes in the wording and in the coding categories and in changes of layout. Due to the participants in the think-aloud-interviews better explanations were needed for the term "trip".

The rather landscape design of the household form was changed to a portrait format also allowing for enough space to include examples and explanations on the questionnaire itself instead of using an example booklet. The examples and explanations for the travel questionnaire were included in the forms as well, as respondents rarely referred to the example booklet and generally preferred to have examples on the forms. This also helped to reduce the amount of material sent.

A map of the area with a circle indicating the 100 km-distance was included in the survey material and some question wordings were further improved to avoid ambiguities.

##### **4.2. Benchmark Survey**

For the third wave of pilots the page-based design of the trip-based travel diary has been selected as the instrument for the general survey, which was carried out identically in all four countries. Before the surveys started again cognitive laboratory interviews were carried out in Sweden and Portugal to ensure the highest possible quality of the questionnaires.

Involvement in the survey topic had proved to be one of the most important reasons for participation in surveys. To raise the respondents' involvement two additional items have been implemented: a question about the personal assessment of the trip and the offer to inform the respondents about the results of the survey.

Following Ampt's recommendations to reduce respondents' burden (Ampt 1997) a more colloquial language was implemented, i.e. expressions like "mode", "destination" or "origin", were generally avoided.

The survey protocol in the third wave of pilots included a mix of methods regarding the contacts with the respondent. The respondents were called after having received the survey package. These calls served to motivate the respondents to participate, answer questions, sort out the hard refusers and exclude them from the next steps of reminding and interviewing. Respondents who seemed to be willing to participate but let the interviewer know that they had serious difficulties with completing the forms e.g. due to age, physical disabilities or a low level of literacy were offered to report

their journeys and socio-demographics in a telephone interview at this early stage.

The next stages were a friendly written reminder card including the announcement of next phone calls, which were to follow some days later in order to help and offer to undertake the whole survey by CATI.

Before the final response and nonresponse interviews were undertaken a "thank-you"-postcard was sent out to those who had completed the survey.

<b>Survey object</b>	all trips of journeys, involving a destination further than 100 km from the current base of the respondent.
<b>Approach</b>	Trip-based
<b>Minimum distance</b>	100 km - crow-flight-distance
<b>Minimum duration</b>	None
<b>Temporal directions</b>	retrospective
<b>Geographic range of exclusion</b>	none
<b>Temporal range of exclusion</b>	none
<b>Other exclusions</b>	The design should help the respondent to abbreviate the description of repeated journeys
<b>Stage/trip/journey detail</b>	See above
<b>Household instrument</b>	Combined with person and vehicle instrument (A3 folded)
<b>Person instrument</b>	Combined with household and vehicle instrument (A3 folded)
<b>Vehicle instrument</b>	Combined with household and person instrument
<b>Journey instrument</b>	Instrument for selected person Mail out/Mail back: A4 form
<b>Explanatory material</b>	separate explanatory booklet plus explanations on the journey form (A3 folded) Check list for the respondents (A6 - Postcard format) Map of area
<b>Form of contact</b>	mail out (supported by telephone)
<b>Incentives</b>	Offer to send a brief report on the results of the survey
<b>Destination area</b>	municipality or urban area
<b>Reference location</b>	any destination, where the respondent stays for more than one consecutive night

### 4.3. Additional Surveys

In addition to the identical benchmark survey, there were additional elements tested in each country with part of the sample.

#### *Survey No.1(France)*

A possibility to avoid memory effects and their results are prospective surveys in which the survey is announced before the survey period begins. To allow comparisons between the two methods an additional prospective survey was undertaken with part of the sample in France using the same survey material as in the benchmark survey. In addition a memory jogger was sent out along with the announcement letter before the survey period.

The respondents were motivated by friendly phone calls and a written reminder. In the follow-up interviews they were asked about their use of the memory jogger and the time the survey was completed in order to separate the data from the "retrospective" respondents, which were possibly more affected by memory error.

### ***Survey No. 2 (Portugal)***

Part of the sample in Portugal received the same survey material as in the benchmark survey, but was additionally phoned after their written where they were queried about the stages within each reported journey. It was tried to reduce the burden and still collect information about the stages of journeys by interviewing the respondents by telephone and ask them about the details of the trips. The advantages of this method were seen in a simpler trip-based diary and the possibility to give the respondents individual explanations and guidance in a personal telephone interview.

### ***Survey No.3 (Sweden)***

The pilot surveys of the first and second wave were based on a mixed household/person approach. The sample was person-based and whereas only one person of the household was asked to report their trip, socio-demographics were collected from all household members on one single household form completed by the person in the sample. Difficulties with this approach were concerns about privacy and the lack of knowledge about the socio-demographic details of all household members by the respondent. The additional survey undertaken with part of the sample in Sweden was a purely person-based approach, where only information about the chosen member of the sample was collected on household and travel form.

### ***Survey No. 4 (UK)***

For the fourth additional survey carried out with part of the sample in the UK, a trip-based diary was designed using the results of the cognitive laboratory type interviews of the first wave of pilots. The diary contained a question about the chosen route on each trip. This design was supposed to be a possible alternative to a stage-base design. In contrary to the concept of the stage, which the respondents had severe difficulties with, the experiments of the first wave had proved, that respondents were rather comfortable with describing their routes, while providing invaluable detailed information about each reported trip.

## **4.4. Results**

At the present time the data of the third wave has not yet been processed completely, but so far the most remarkable result has been an extremely high response rate of 82% (not including the follow-up interviews with converted nonrespondents) in Sweden where the surveys were carried out by the national statistical office SCB (Statistiska Centralbyran). In other countries the surveys were undertaken by market research companies and resulted in lower response rates. In the UK and in France the generally over-surveyed public used the motivation calls to state their refusal to participate in any kind of surveys. In Portugal the rate of refusals to participate in telephone interviews increased enormously compared to the first wave of pilots, although the surveys were undertaken by the same company. The reason for that is most probably the fact that the respondents received the survey material in advance and generally being easily offset by any kind of "forms" perceived the task as more



complex than without this knowledge.

The travel diaries including a route description for each trip were very successful. Respondents, car drivers and Public Transport users, obviously had no difficulties with the question and even enjoyed describing their trips in this way. Therefore asking about chosen routes seems to be an alternative to the stage-based questionnaires, which mean a higher respondent burden.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1. Survey instrument**

In terms of layout for a large-scale international survey with identical forms in different languages it has to be considered, that English, which is the language in which the questionnaires are likely to be initially designed, uses much fewer words for expressing the same concepts as other European languages. Questions translated in French or Portuguese need much more space than a question in English.

The reaction of the respondents to the questionnaire showed that in Portugal and possibly in other Southern European countries, a paper instrument tends to reach very low response rates, whereas telephone interviews tend to be very successful no matter how complex or time consuming a survey is. Experience of the local survey firm and the local consortium partner showed that the personal contact is a very important issue in Portuguese culture and this has to be considered in survey design. Another factor besides the preference of personal contact is obviously also the rejection of paper forms. As the third wave of pilots in comparison with the first wave proved, respondents were much more co-operative if they had not received the survey forms in advance of the telephone interviews.

In general it has to be considered that even with an incentive offered researchers cannot force respondents to participate in their surveys. Therefore travel surveys have to be designed in a way that more involvement and interest can be awakened on the side of the population. The surveys should be designed from the respondent's view and not from the researcher's.

### **5.2. Survey protocol**

The unexpected success of the Swedish pilots in the third wave, that were undertaken by the National Statistical Office prove the hypothesis of Heberlein and Baumgartner (1978) that the organisation undertaking the survey has a very high impact on response rates. In their meta-analysis of 98 methodological reports they concluded that compared to surveys undertaken by a University those undertaken by a market research company would reduce the response rate by 10% whereas the response rate would be raised by 10% if the survey organisation was the governmental authority (Kalfs et al 1997). One has to consider that these results were generated 20 years ago and in the meantime, an over-surveyed population, for which time and privacy are extremely valuable, the attitude towards market research companies is probably even more negative.

The mix of different data collection methods proved to be very useful in order to raise

survey response rate and correct item nonresponse and errors made by the respondents. In general follow-ups proved to have a positive effect on response rates. Respondents, who had simply forgotten to complete the survey forms or to mail them back, were reminded to do so. Also reminders state the seriousness of a survey.

A mix of methods for the initial contact as suggested by the new KONTIV design has to be reconsidered. The experience with the third wave of pilots showed that telephone calls after the mailing of a paper instrument might only be successful, if the survey organisation was an official authority. In other cases, such as in the over-surveyed countries such as France and the UK, they were an opportunity for the respondents to state their hard refusals to participate in the survey. In Southern European countries at present, methods that involve personal contact should be used, without employing paper instruments.

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All mentioned deliverables can be downloaded from the MEST website on [www.uibk.ac.at/c/c8/mest](http://www.uibk.ac.at/c/c8/mest).

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