FHWA Study Tour for National Travel Surveys

FHWA's Scanning Program

U.S. Department of Transportation
Federal Highway Administration

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The metric units reported are those used in common practice by the persons interviewed. They have not been converted to pure SI units since, in some cases, the level of precision implied would have been changed.

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FHWA Study Tour for

National Travel Surveys

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Executive Summary

In October 1993, a team of Federal, State, and local officials visited major centers in Europe where substantial national travel survey activities have been undertaken. Among the purposes of the visits were to seek out innovative methodological approaches to transportation survey design and operations, to review European experiences with different kinds of institutional arrangements, and to investigate new ideas in survey content and new collection methods. The countries visited included:

The United Kingdom
Denmark
The Netherlands
Sweden
France
Germany

Information obtained in these visits will have direct and immediate application in the United States. The U.S. Department of Transportation (DOT), under the leadership of the Federal Highway Administration (FHWA), will be designing and conducting the Nationwide Personal Transportation Survey (NPTS) in 1995. In addition, the Department's new Bureau of Transportation Statistics will also be conducting a major survey of long-distance travel, the American Travel Survey, in 1995. These surveys represent major financial investments by the DOT. Any experience that can be converted into greater efficiency or program improvement will be highly cost-effective.

While the primary benefits of the field visits of the Travel Survey Panel will be the detailed evaluation of survey design and operations experience and in the wealth of supporting materials obtained in meetings with European counterparts, there are valuable broader perspectives that were obtained and can be identified at this early stage. This report documents some of the broad observations and comments of the study team, based on their six country visits. They are divided into the three discussion areas employed in the visits: institutions, content, and methods.

Institutions

- Travel surveys are expensive. Cost is a critical factor in weighing the trade-offs between content and methods. All States had stringent cost constraints.

- Significant differences exist in funding levels for travel survey data activity. Relative to their overall programs, Europeans appear to devote more resources to this area than we do in the United States.

- Many of the agencies visited referred to the difficulty in effectively justifying survey funding needs. Some of the approaches used to support program financing were continuing programs to avoid funding spikes, broader popular dissemination of survey results to generate public interest and support, and emphasis on the ratio of data costs to total scale of transportation investment.

- Most nations visited had advisory groups composed of agencies that were financial supporters and who provided some program oversight. This approach received mixed reviews. Many felt that boards of advisors or other groups conducting surveys suffered from divergent points of view. A single-purpose approach was

preferred. Others felt that the programs benefited from the increased array of input.

- The survey programs in almost all countries visited had the advantage of a "statistical infrastructure," which is not available in the United States. These systems are not perfect but have powerful statistical applications. They include:

  Both address registers and population registers—immensely valuable and cost-effective sources for drawing survey samples.

  Availability and use of address registers for the entire country, often developed by post offices.

  Availability and use of various types of population registers, in which every person in the country is listed. These registers usually contain birth information and some socioeconomic data. Updated frequently by each citizen, population registers amount to a continuous census.

- The Netherlands does not conduct a population census. Germany also cancelled its last census. Both of these countries have registers that obviate much of the need for a census.

- Many of the nations have multiple registers incorporating tax files, school files, and employment files—all linked or linkable. Unfortunately, gaps exist within some of the registers. One idea is to link vehicle files to person files. Little has been done with motor vehicle-type files, but the potential use of vehicle files has generated public resistance. In some countries there seems to be rising public concern about the use of statistical registers in general.

- Access to confidential data files is often permitted if users sign agreements regarding disclosure protection and appropriate use.

- Universities are frequently employed as archivists of nationally collected data sets.

- Public/private cooperation and contract bidding have expanded substantially all over Europe. Private firms compete directly with national statistical agencies on survey projects and often have controlled access to the government-held registers, identified above, to ensure fair competition.

- The frequency of travel surveys in Europe is high. In every case, national surveys were under way or just completed, or continuous surveying was in place.

- Of substantial interest was the number of cases in which national legislatures had specified that a survey be conducted as part of the continuing evaluation of a new piece of legislation or a major change in policy, such as transit fare increases.

Content

- Nation-to-nation comparisons of travel data are difficult because of differences in the definitions of travel attributes and rules of procedure in data collection.

- Greater focus has been given to national-level data collection, based on the

national travel surveys, rather than on local data collection. Both Paris and London are doing individual travel surveys, but they are being performed by the national agencies, although with extensive local participation. Germany is conducting a substantial number of local-specific surveys.

- Unlike the United States, European governments conduct a considerable amount of attitudinal and public-preference surveying. Much of this work is targeted at public affairs issues.

- All surveys mix short and long trips in the survey design.

- Short trips are incorporated more frequently in European surveys. These short trips sometimes include walking and bicycling trips as short as 200 or 300 meters in length. Bicycling groups, among others, encourage the measurement of this travel. A major goal is to obtain accident-exposure data, given the high accident and death rates among walkers and users of two-wheeled vehicles of all kinds.

- The distinction between short and long trips is even less clear in Europe than in the United States. Long trips tend to be shorter in Europe than in the United States and are less relevant in an intercity context.

Method

- Continuous surveys are preferred. Half of the countries visited have adopted a continuous system in which observations are made each week of the year over a four- or five-year program cycle.

- The use of omnibus surveys, general surveys of the population containing a variety of topics, is more prevalent than in the United States. This is true of both public and private survey operations.

- Many nations indicated heavy national involvement in local data collection, mostly for the major cities, and displayed significant interest in piggybacking on national surveys for local data needs. This was a partial function of the national survey's ability to obtain and code detailed trip geographic identification.

- The range of details obtained for origin-destination data in national surveys varies significantly. Automated address coding development would appear to be less advanced than in the United States, probably because we have so many large metropolitan areas that require detailed data. But the clear trend in Europe is toward greater sophistication and detail in geographic identification and use.

- The use of geographic information systems (GIS) for display and analysis has increased. Several notable projects were presented using computers for tracing travel itineraries and for presenting a national atlas database.

- The use of computer assisted telephone interviewing (CATI) is growing in Europe. Many countries have higher telephone ownership than in the United States and have better mechanisms for identifying and accessing persons without telephones.

- Because of the type of registers employed in many countries, sample frames are often person-based rather than household-based. This creates survey complexities because of the importance of household roles in travel demand and characteristics.

- Area classification for urban and rural areas, designed to represent distinct settlement patterns, is used extensively.

- The use of panels, especially for focused public policy questions, is more extensive in Europe than in the United States.

- While public access to survey results is not restricted, and is even encouraged in some cases, the dissemination of national survey data is usually limited to sponsors, primarily government agencies, and the research community. The emphasis, except in individual urban surveys, as in London and in various German cities, does not focus on expanding or improving public information.

- Roadside surveying and on-board surveys are far more prevalent in Europe. Due to safety concerns, roadside surveying has diminished in the United States.

- Special-purpose surveys for travel and travel-related activities are performed more frequently in Europe. These include travel of the elderly, young peoples' travel, students' travel, activity surveys, and quality-of-life surveys. Such special-purpose surveys warrant further consideration in the United States.

1. Introduction

1.1 Background

The FHWA of the U.S. DOT is planning to conduct the Nationwide Personal Transportation Survey (NPTS) again in 1995, involving interviews with approximately 25,000 households. The NPTS is the primary national source of travel statistics on the travel behavior of the U.S. population and was first conducted in 1969. Aside from an extensive battery of data on national patterns and trends, it provides a benchmark for local, State, and metropolitan comparisons to locally developed surveys. In many transportation-related subject areas, the NPTS is the only national source of information.

In addition, the U.S. Congress has recently established a Bureau of Transportation Statistics within the Department of Transportation. That agency plans a national travel survey called the American Travel Survey, also scheduled for 1995. This survey will focus on long-distance travel. This survey and the NPTS need to be coordinated in definitions, design, and procedure. These surveys represent major financial investments by the DOT. European experience in merging both local and intercity travel surveying could be helpful in providing guidance to the U.S. programs.

The 1990 NPTS survey successfully introduced a number of innovations, such as computer assisted telephone interviewing (CATI) using a private firm. To continue the adoption of the latest advances in survey practices, a scanning of current international practices was considered highly beneficial. Many European countries have extensive travel survey programs exhibiting substantial expertise and experience. The ability to observe the practices in other countries, to gain from their experiences, and to discuss alternative approaches with people who have similar responsibilities can ultimately pay dividends in money, time, and survey quality.

This report documents the findings of a scanning trip of a team of six U.S. representatives. The team visited national statistical offices in Europe with the potential of sharing important information on the design of travel surveys in the United States. This visit was part of a series of scanning trips to exchange experience with the experts of other nations in subjects important for the U.S. transportation profession in general, and for the FHWA of the U.S. DOT, the trip's sponsor, specifically.

1.2 Purpose of Trip

The specific intent of the trip was to conduct in-depth review and documentation of national travel surveys conducted in Europe. The review would encompass the experience of other nations, including methodological approaches, survey planning considerations, funding and operational practices, privacy issues, statistical sampling, statistical expansion and dissemination of results. The visits would also permit the sharing of recent U.S. experience in survey design with other interested countries. Opportunity for personal exchange of views would also be extremely beneficial. The visits also established valuable contacts that will permit a mutual exchange of information.

Among the other purposes of the visits were to explore and evaluate innovative methodological approaches to transportation

survey design and operations, and to review European experience with different institutional arrangements for survey development, new ideas in survey content, and new collection methods. The scanning review would be useful in assessing the potential application of identified techniques to national and urban surveys, with the overall objective of improving the efficiency of survey operations and, ultimately, the accuracy of summary results.

The information obtained in these visits will have direct and immediate application in the United States. The two U.S. surveys will involve millions of dollars in public funds and will be the U.S. benchmarks of travel activity for the Nation into the next century. It is imperative that these surveys be produced inexpensively and with the highest quality standards.

1.3 Team Members

The study team was assembled to ensure representation and expertise in the field of travel survey design. Team members appear below, with their full names and addresses, along with brief resumes included in Appendix A.

Name	Organization	Role
David R. McElhaney	Federal Highway Administration U.S. DOT	Team Leadership and Represent Federal Perspective
Frank E. Jarema	Federal Highway Administration U.S. DOT	Represent FHWA (Program Manager for the Nationwide Personal Transportation Survey)
Philip Fulton	Bureau of Transportation Statistics U.S. DOT	Represent Bureau of Transportation Statistics (Program Manager for the American Travel Survey)
Ronald Tweedie	New York State Dept. of Transportation	Represent State Perspective
Charles Purvis	Metropolitan Transportation Commission	Represent Metropolitan Planning Organization (MPO) Perspective
Alan Pisarski	Consultant to FHWA	Report Facilitator for TTEC

1.4 European Contacts

During the trip, team members met with individuals or groups representing ten different companies, research facilities, universities, and public sector agencies. The principal representatives and their affiliations are summarized below. In Appendix B, their names, addresses, and phone/fax numbers are listed.

The United Kingdom

Mr. Kerrick Macafee	Department of Transport
Professor Peter Jones	University of Westminster
Mr. Peter Capell	Department of Transport

Denmark

Mr. Erik Toft	Ministry of Transport

The Netherlands

Mr. Ambrosius Baanders	Ministry of Transport and Public Works

Sweden

Mr. Krister Spolander	Statistics Sweden
Ms. Amie Lindeberg	Statistics Sweden

France

Mr. Jean-Loup Madre	National Institute for Research in Transport and Safety (INRETS)
Mr. Michel Houee	Ministry of Transport (OEST)

Germany

Dr. Werner Brög	SocialData
Ms. Andrea Börngen	European Travel Data Center

1.5 General Trip Description

The procedure of the scanning program involved each of the following steps:

1. Establish contact with comparable agencies abroad.
2. Identify through correspondence the issues of concern to U.S. interests in the corresponding nations.
3. Provide officials of those countries with lists of questions.
4. Identify appropriate parties.
5. Establish meeting dates.
6. Conduct site visits to discuss the questions.
7. Obtain research materials and other documentation of experience.
8. Document the visits.

Based on international literature review and the expert team's previous contacts, the key countries in terms of leadership in design and conduct of travel surveys were indentified. The service of a consulting group specializing in the logistics of international visits was retained to establish requested European contacts, develop preliminary visiting schedules, and arrange for the general logistics of the visits, including air travel, hotels, and ground transportation requirements.

Appendix C is a sample of the contact letters used. The team developed questions of interest and transmitted them to potential contacts. At each site a local key contact was asked to take on the role of assembling the appropriate persons to ensure the most effective use of time and to serve as host of the meetings in the site city. A glossary of acronyms and agencies for team use was developed and updated during the trip (see Appendix D).

In addition to their specific, separate roles, each member of the team was required to take individual notes to assist in report preparation and review, and to provide their individual expertise and perspective to the team effort.

A compressed itinerary of the six countries was established to maximize the efficiency of the schedule and accommodate the schedules of those visited.

Team members were provided with notebooks that included background materials on each country, the questions to be discussed, materials to guide the visits, and space for note taking. A laptop computer was used to maintain notes for each visit and to provide team members with rapid summaries of meeting results.

2. Summary of Visits

This section briefly outlines the meetings conducted in the six countries visited to provide a sense of the overall trip. In most countries the hosts prepared extensive agendas of expert presentations based on the questions that had been forwarded to them in advance. Agendas for most of the meetings appear in Appendix E. Typically, after brief introductory preliminaries, the team and hosts discussed the questions at hand. Our European hosts were gracious in their hospitality to the team and generous with their time and expertise.

2.1 The United Kingdom

The visit to the United Kingdom involved several meetings, all in London. After a Sunday team planning session with the team's contracted logistics guide and discussions of operating procedures, the meetings commenced. Monday's visits involved an all-morning session with the group from the UK's DOT and Office of Population Censuses and Surveys that operates the national travel survey. The afternoon session was dedicated to a meeting with university experts in the travel survey and transport statistics area.

In the evening, members of the team met with the DOT Director of Statistics to discuss new national transportation policies and data collection in the United States and Europe. The following morning a meeting was held with the team that managed the London Area Transport Survey. A complete briefing on their program was obtained. After the meeting the team departed for Copenhagen, Denmark.

2.2 Denmark

The entire day, Wednesday, was scheduled for a meeting in Copenhagen with the Danish Transport Ministry and associated organizations involved in the operation of their national survey. The Danish hosts arranged the meeting with representatives of the Statistics Office, the Ministry of Environment, the Transport Ministry and Danish Rail.

2.3 The Netherlands

On Friday the activities in the Netherlands paralleled the structure of the meeting in Denmark. The hosts arranged the meeting agenda and brought in a team of experts representing all the key agencies and interests in their program. The meeting involved a full day of sessions at the Netherlands Ministry of Public Works headquarters, Rotterdam. The day closed with informal discussion between the Dutch representatives and the U.S. team.

2.4 Sweden

The team traveled to Stockholm on Saturday and met to compile and compare notes and review progress to date. Computer versions of the summary notes for meetings to date were prepared, distributed, and reviewed.

Monday, a full day of meetings was held with the Statistics Sweden team, who manage their country's national travel survey. Other groups associated with travel surveys were invited to participate in the meetings to discuss special areas such as the use of Geographic Information Systems (GIS) in travel surveys.

2.5 France

On Wednesday there were two major meetings in Paris. The first, a morning meeting, was an extensive discussion of survey matters with the team that manages the French national travel survey. In the afternoon the team met with Transport Ministry policy staff to discuss international statistical matters relating to the actions of multinational agencies such as the European Union.

2.6 Germany

After a morning trip to Munich, Thursday, there was an afternoon meeting with representatives of the European Travel Data Center, a private organization. The following morning the last meeting was held with SocialData, another private entity, that performs an extensive number of travel surveys in Germany and in other countries. This meeting continued into the afternoon.

The last day in Germany was devoted to final meetings of the team, review of the prepared draft notes of the meetings, and the drafting of final comments.

2.7 Overall View

The team's overall view was that the meetings had been valuable and the trip could be considered a success. The professional capabilities and the uniform willingness of the country programs visited to be cooperative and supportive was a major factor in making the visits so worthwhile. One of the great benefits of these meetings has been the opportunity to exchange information with professional counterparts on a face-to-face basis. The interaction that this makes possible, and the ability to move from one important subject to another in a conversational format, cannot be duplicated by telephone or correspondence. These personal contacts make future correspondence more feasible and effective.

3. Findings

3.1 Overview

The U.S. study team prepared a series of questions to focus the objectives of the scanning trip. These questions were not intended to be exhaustive but rather to indicate to the European hosts the primary areas of interest of the team and to assist in guiding discussion. The questions were submitted several weeks before the meetings to assist hosts in identifying those who would be appropriate to have present in the meetings. Some corresponding organizations sought to answer each question specifically in the course of the discussions; others viewed them as a guide for the general flow of topics. In most cases the questions were raised and addressed in every meeting.

The question set was divided into three categories: institutional, referring to the organization and funding of the surveys, distribution of the data, and other administrative matters; content, treating the actual subject matter covered in the surveys; and method, concentrating on the statistical surveying and data processing approaches employed. The question sets are described below.

Institutional

- What is the general character of national versus local/state/provincial surveys: content, methodology, sample size?
- Is subsampling possible at the local level, in corridors, etc.?
- Is there collection of a national sample of travel with additional detailed geographic origin-destination for local use?
- What are the costs of conducting travel surveys and methods to fund the surveys?
- How are the data disseminated? Printed reports, automated files? Is there interest in broad audience coverage?
- Are the results provided to the general public to keep them informed of transportation issues and alternatives?

Content

- Is there collection of long-distance and local travel in the same survey?
- Specifically, why is information collected and how is it used?
- Are there links to other surveys?
- What definitions of "trip" are used to describe person and vehicle movement?
- What level of detail is obtained for each trip?
- What procedures are employed for estimating vehicle miles of travel/person miles of travel?
- What about practicality of obtaining road class information for individual trips?

Method

- What is the nature of your sample frame?
- What is your experience with telephone interviewing versus face-to-face interviewing?
- How are out-of-area visitor trips handled?
- If telephone method is used, how are no-phone households handled?
- What is your experience with the use of respondent diaries?
- How do you measure annual vehicle travel: respondent estimates versus odometer readings?
- To what extent are panel surveys used?

The findings of the team are organized and presented in the format of responses to the questions, though this is not necessarily the manner in which the discussions flowed. Consequently, this approach causes some loss in the great benefits obtained from the actual meetings. The reader is referred to the actual meeting notes on file at the Office of Information Management, FHWA, for the more detailed information from the individual sessions. Documents and other work materials obtained from the visits, identified in Appendix F, are held in a separate file at FHWA.

3.2 Institutional Questions

National versus local/state/provincial surveys—general content, methodology, sample size:

While national surveys varied in content, scale, and scope, all of them provided resources of great value to those studying survey organization and methods. The following table summarizes the salient characteristics of the main national surveys of the nations visited. (Information not available to the study team is so indicated.)

NATIONAL TRAVEL SURVEYS SUMMARY TABLE

SURVEY INFORMATION	UNITED STATES	UNITED KINGDOM	DENMARK	NETHERLANDS	SWEDEN	FRANCE	GERMANY
RECENT SURVEY YEAR	1990	July 1988 to present	1992	1993	1994–1998	May 1993–April 1994	1989
PRIOR SURVEY YEARS	1969; 1977; 1983	1985–1986; 3 surveys in 1970's	1975; 1981; 1991	1978 to 1992	1978; 1984/85	1966–1967; 1973; 1981	1976; 1982
SURVEY TYPE	Telephone (CATI)	Home interview	Telephone	Phone/mail since 1985	Telephone (CATI)	Home interview	Questions delivered and collected by interviewer
DURATION	1 year	Continuous	1 year	Continuous	Continuous	1 year	1 year
SAMPLE SIZE	20,000 households	3,500 households	1,800–2,300 persons/month	20,000 households	10,000 persons—yr. 1 8,000 persons—yr. 2 and 3 6,000 persons—yr. 4 and 5	20,000 households	20,000 households
CONDUCTED BY	Private consultant (Research Triangle Institute)	Office of Population Censuses and Surveys (OPCS)	Danish Central Statistics Office (DCSO)	Central Bureau of Statistics	Statistics Sweden (SCB)	INSEE (French National Institute of Statistics)	Emnid Opinion Research Institute
RECALL PERIOD (ALL TRIPS)	Previous day	7 days	Previous day	1 day	1 day	Previous day and previous weekend (one person)	1 day
LONG-DISTANCE TRIPS	14 days	7 days plus 3 previous weeks; 3 previous months	Previous month	N/A	1 month ≥100 km 2 months ≥300 km	Previous 3 months and following 3 months (using trip diary)	3 months
RESPONDENTS' AGE	≥5	All ages	16–74 (Separate surveys ≤16 and ≥74)	≥12	6–84	≥6	≥6
RESPONSE RATE	83%	79%	N/A	60%	85%	72%	64%
LONG TRIP DEFINITION	≥75 miles (121 km)	≥50 miles (80 km)	≥100 km	N/A	≥100 km	≥100 km	≥50 km
USE OF DIARIES TO RECORD TRIPS	No	Yes	No	Yes	Yes	Yes	Yes
HOUSEHOLD NOTIFICATION PRIOR TO INTERVIEW	No	Yes	N/A	Yes	Yes	Yes	Yes

Subsampling at the local level, in corridors, etc.:

Because of sampling constraints, the lowest level of geographic detail at which the UK National Travel Survey (NTS) data can be summarized is the county level. The national government would consider it infeasible to increase sampling to support the planning needs of local governments.

In the new Swedish national travel survey planned for this year, the scale of interviewing is to be expanded. A continuing program was envisioned with the following person sample sizes:

Year 1	10,000
Year 2	8,000
Year 3	8,000
Year 4	6,000
Year 5	6,000

Locally funded additions to the sample would be permitted and are expected. Questions could be added or changed at the local level. Local users will be permitted to add questions and expand observations in the national survey, at cost.

The French did an expanded sample of the national survey in Lille. Lille, a city of about 400,000 and divided into about 100 communes (local political areas), generates only about 300 observations in the national survey. They are expanding the sample to get 1000 observations for the city planning people in Lille to use. Many other areas of about 100,000 population also wanted to obtain expanded samples. It was decided that it was infeasible and these areas would be best served by doing their own surveys.

Collection of a national sample of travel, with additional detailed geographic origin—destination for local use:

In the UK, local governments do not take an active interest in the national survey. Local governments would need better geographic detail of survey origins, destinations, and other changes to gain benefit from the survey.

For the first time, the new Swedish survey will obtain detailed addresses; addresses will be obtained for trip ends and coded to small geographical areas (e.g., real estate parcel).

In the Netherlands, each year a different region receives more detailed geographic identification.

Cost of conducting travel surveys and methods to fund the survey:

Funding for the NTS in the UK is about £1 million (about 1.4 million US$) per year, with £7 million going to the Office of Population Census and Surveys (OPCS) to perform the survey. It is intended that future surveys will be done by contractors with OPCS bidding against private firms on a competitive basis. They believe that a continuous survey provides a better allocation of skills and labor, i.e., retention of interviewers. In some cases the ability to spread funding over annual periods rather than have sharp spikes periodically may mean that budgets are less likely to be cut. They do an annual budget and survey justification. In general, they strongly favor the continuing survey approach and are planning a "ruthless" review of content in 1995.

The London Area Transport Study (LATS) survey program was founded and funded as a joint effort of the Department of Transport and the London Research Centre (LRC). The LRC is a sort of Council of Governments, a new creation of the 33 London boroughs. After the Greater London Council was abolished in 1986, the LRC was established to provide research and consulting services to the boroughs. Two-thirds of the study was funded by the Ministry and one-third by the LRC. The budget of £7 million is divided into roughly 3 million for the Home Interview; 3 million for roadside surveying; and 1 million for planning, design, smaller surveys, database development, and analysis.

Total cost of the Danish survey is estimated at 13 million Danish Krone per year (approximately 2 million US$). A steering committee of about ten agencies oversees the survey design and conduct. Each pays a minimum of 50,000 DK to participate in management and obtain survey results.

In the Netherlands, the Ministry of Transport funded the large-scale, continuing panel that was the main topic of our discussions. The National Travel Survey is funded by the Central Bureau of Statistics.

In Sweden, as in the United States, funding is an issue; in fact, earlier attempts at a new survey had to be postponed due to lack of financial support. In 1991, led by the Road Transportation Research Institute (NRTI), funding was developed with the goal of obtaining total travel exposure data (annual levels of travel per capita or per vehicle) for safety programs, and other behavior data for policy analyses and environmental concerns. Many agencies have participated in the development of the concept of the survey. Local agencies were invited into the process but did not participate, primarily for financial reasons. In 1984 the survey cost 5 million Swedish Krona, roughly equivalent to 1 million US$. The new five-year program for 1994–1998 is estimated to cost 12–13 million SEK. The survey was bid competitively among private and public organizations with Statistics Sweden, the national statistical agency, selected. It was identified as the best bid—not the lowest. Private firms bidding on the survey have equal access to private State files, including the protected personal register system.

In France, the national travel survey is funded by many agencies that jointly oversee the survey activity. In response to a question about costs, they indicated that the survey costs were approximately 35 million French francs: 25 million in fixed and 10 in variable costs (about 7 million US$). Funding is contributed by about 18 organizations. They believe that so many funders may be positive, because many ideas arise, and extreme ideas are strongly constrained. But there are problems created by so many viewpoints as well.

In Germany, Dr. Werner Brög of SocialData agreed with the view in many countries that small-budget continuing surveys with evenly distributed funding from year to year are superior in institutional terms to large surveys. Such survey budgets have periodic sharp spikes and are subject, therefore, to budget cuts.

Data dissemination—how are the data disseminated—printed reports, automated files?

With regard to the NTS of the UK, free tables are provided to governments every six

months. Raw data tapes are received every six months. These are processed to produce a three-year average tape each May. Printed reports are sold by Her Majesty's Stationery Office (HMSO) and are expensive, roughly 40 US$. Essex University provides archival services for the data and makes tabulations available, at low cost, on a five-day turnaround basis.

The nature of reporting and dissemination of the LATS survey was discussed. Their audience is deemed to be the public, members of Parliament, interest groups, and analysts. Costs of reports are high, as noted in the NTS discussion. The database will be held in both the Department of Transport (DOT) and the LRC. DOT will supply data to the central government, while the LRC will respond to local government needs and commercial users. These will be reviewed by the DOT. Private contractors will do the operational data processing of requests.

A major focus of the Swedish system is on maximizing public access to the data. They do seek to obtain some recovery of costs for their publications. Special tabulations are produced, for a fee, but research uses are generally free. While they conduct research projects for private customers, they are precluded from performing marketing studies. They introduced a proprietary system, known as PC-AXIS, which apparently acts as a tabular design software package and also can perform statistical disclosure review. Several documents were provided describing PC-AXIS.

In the Netherlands, a consortium of universities provided dissemination services regarding data results. The Steinmetz Archives at the University of Amsterdam was the central repository.

In France, all data gathered is public, in principle; but, in reality, they must restrict access to recover costs to supporters. There is a one-year restriction on distribution to give supporters a return on investment. Cost-based tabulations are produced for requestors, but only published summary data are provided to others. They are open to data requests and to making results available. A special committee may review products for quality.

Marketing of survey results—Are the results provided to the general public to keep them informed of transportation issues and alternatives?

In the UK, the government holds seminars to hear the concerns of data users and obtain views on data needs from the general public, private sector, and academia.

At SocialData in Germany, Dr. Brög presented a series of graphics-oriented studies he had done to emphasize the need for clever, insightful, and attractive presentation. Making the survey data appealing and accessible also generates support for future surveys. In general, they avoid giving computer files to clients, preferring to do data analyses and syntheses themselves.

3.3 Content Questions

Collection of long-distance versus local travel, in the same survey:

The UK survey collects long trips, defined as those over 50 miles in length, using a recall period of one month—the three weeks prior to the travel week and the travel week itself. Air and water travel for recreation

purposes are excluded, as are foreign destination trips.

The Danish survey obtains a long-trip interview as part of the National Travel Survey. A long trip is defined as being over 100 km. A one-month recall is used to expand total trip observations. The purpose coding differentiates only work and private travel. Geographic identification is coded to municipality, from within a selected list of about 20 places. Because of high second-home ownership, trip frequencies are high (1.3-2 per month); summer travel rates are up to 2.4 per month. No segmentation by demography is available yet, and foreign travelers are not surveyed.

In the Swedish survey, respondents are asked their trip lengths expressed in kilometers. Because both the air and rail authorities have had a major role in the survey, long-trip surveying, trips over 100 km and over 300 km, is an important facet of the design. For those trips over 100 km in length, mode, purpose, and distance data were obtained. No overnight data were obtained.

In the past, the sample size was the same for local and intercity trips. The long-distance component of the survey will obtain data on all trips over 100 km in length, recalled over a one- month period, contrasted to a two-week recall in previous surveys. Also, in previous surveys, data on trips of over 400 km were obtained for a recall period of six months. That will be reduced to a two- or three-month period (yet to be decided). Main trips and part trips, as defined, will be obtained in the long survey, as well as the most used mode, based on distance. Trip purposes will be identical to the local-trip format.

In France, the national survey, like NPTS, collects data on both local and long trips. Long-distance trips are obtained in two parts, a three-month recall at the time of interview, and a diary to record another three months of travel for later return by mail.

In Germany, Dr. Brög of SocialData has done long-trip surveys using mail techniques. One that he described involved three-month recalls conducted in four waves to gain a year's travel for activity over 50 km in length. A second, followup questionnaire was used to obtain further data among active travelers. His focus, as in other areas, is not to alienate 95 percent of respondents with a question that applies to only five percent.

Types of transportation problems being addressed by survey results, specifically, why is information collected and how is it used?

The primary reasons for the LATS survey effort were based on the need for data to support the expected development of a large investment program in greater London. Understanding overall travel behavior for purposes of social policy was also a major factor. Because the last data set was collected in 1981, it was deemed necessary to establish new information for investment analysis. There had been a history of surveys, every ten years, since 1962. The surveying included the need to update model parameters—the Greater London Transport Survey (GLTS) model—and also to support local analysis at the local government precinct or ward level.

The UK survey is the only national source of data about bicycling and walking, which

have become pertinent public policy issues. Some of the other data, such as journey-to-work data, are also collected as part of the decennial census, as is done in the United States. The survey contains an extensive series of questions on subsidies to both auto and transit and the use of discount transit coupons. There is also extensive survey coverage regarding transit availability and persons with travel disabilities.

In the UK, responses to questions regarding transit availability and quality, cost of parking, rear/front seating in vehicles (for safety studies) have all been collected. Some data are collected because of the need for information to provide subsidies. Men over 65 and women over 60 are eligible for public transport subsidies.

Among the key application areas for the survey's contents are:

- Long-range forecasting input.
- Vehicle occupancy rate calculations.
- Accident rate exposure calculations.
- Fuel tax studies, taxation policies.
- Walking, cycling needs.
- Needs of elderly and/or disabled.
- General monitoring of distance, travel time, and purpose.
- Socioeconomic trends.

The Danish parliament decided that there was insufficient data for public policy making and planning. Energy and environmental issues were a major factor, given that transport uses 50 percent of petroleum and 20 percent of energy in Denmark. Other uses of energy have decreased; transport use has increased. The concept of sustainable development is a new factor.

In Sweden, the lack of current information has led to interest in a new survey—the last survey was conducted in 1984–1985. Among the key objectives of the survey program was the ability to support cost/benefit analyses in rail and road investment. Big increases in value-added taxes and fuel taxes have increased the need to trace price and travel links. The ability to provide an extensive description of travel behavior was a prime purpose in past surveys, and among the goals for new data are cost/price information for trips, particularly transit and transportation network-related.

Links to other surveys that capture a portion of needed data:

In the UK, the national family expenditure survey, the equivalent of the U.S. Consumer Expenditure Survey (CES), obtains annual expenditure data, showing 12–16 percent of incomes are spent on transport. Also a housing survey, apparently similar to the American Housing Survey, obtains some travel-related housing data every two or three years. It was noted that the national census, conducted in 1991, did collect journey-to-work data as part of a 10 percent long-form addition to the census.

Denmark also has a CES-type survey, conducted every five years, that does contain some travel expenditure data.

In Sweden, there are many other surveys that relate to transport. A CES-like survey collects travel expenditure data. A quality of life survey covers transport service quality every 10 years. Panels are frequently used, even for political opinions. The labor force survey is a two-year, 18,000-interview-per-month panel. It will

collect electronic input after a computer is installed in each household.

In France, transportation price index data is obtained from an establishment survey conducted every five years.

Definition of "trip" used to describe person and vehicle movement; links between local and long trip survey:

The NTS of the UK employs the following trip definitions:

- Journey—one-way course of travel having a single purpose.
- Main purpose—that purpose without which the trip would not occur.
- Brief call—an incidental stop, as part of a trip.
- Stage—a change of mode or change of ticket; a leg.
- Escort purpose—similar to serve-passenger concept, used in the USA.

Walking trips have varying distance thresholds, defined as:

- First six days of the survey week—over one mile.
- Seventh day—all trips over 50 yards, whether taken alone or as part of a multimodal trip.

The UK survey does not record trips by persons who operate a vehicle as their occupation but does include work-related trips that occur as part of a day's activity.

In Denmark, minimum trip distances are 300 meters.

A unique approach to trip definition is employed in Sweden. Trips with a home or work base are considered main trips, errands based on main trips are called part trips, and modal segments are called component trips. Counted trips will include walk and bike trips of over 200 meters in length on a public way.

In France, walk trips are obtained for weekday trips only; bicycle trips are obtained for weekdays and weekends.

The European Travel Monitor, conducted by ETIC, the European Travel Intelligence Center, a private firm, is a survey of long-distance travel only. It covers all overnight domestic and international trips by household members over 15 years of age. All trips are counted for the recall period, but only the most recent three international trips are described in detail. Questions include length of stay, modes used, trip purpose, and an estimate of total expenditures in the trip, with average interview lengths of seven to seven and one-half minutes. Obtaining detailed disaggregated expenditure estimates for trip components has proven unreliable; only about half of respondents are able to estimate expenditures reliably.

Level of detail obtained for each trip:

In Denmark, the overall survey data set consists of four elements:

- Data from the central registry.
- Demographic data from the survey.
- Trip data.
- Long-distance trip data.

The background data obtained in the survey consists of ownership of a driver's license, vehicle ownership, transit season ticket status, days per week at work, and time to walk to nearest transit. Trip data collected is very much the standard set: time, mode by leg, purpose, distance of trip, degree of urbanization. In addition to the core survey, its flexible design allows space for featuring monthly, special-purpose questions. This add-on capability has been used for data such as year obtained license, taxation questions, and public reactions to policy issues.

The French questionnaire, conducted as a home interview, is extensive and complete. The survey is conducted in two parts, each requiring about an hour to complete, justifying concerns about its great length. The first part obtains socioeconomic data and the second meeting covers travel activities. They also obtain data on transport expenditures such as vehicle repair costs.

The questionnaire is used as a standard instrument in most of the surveys conducted by SocialData in Germany. Their format displays great openness to the respondents' interests and allows for extensive freedom of comment. It is designed for minimal, basic collection by mail.

Procedure for estimating vehicle miles of travel/person miles of travel:

The UK approach to obtaining total annual VMT/PMT estimates involves collecting respondent estimates that are the product of trips multiplied by trip lengths. Estimates tend to be about 5 percent below odometer readings. The one-week odometer readings, when expanded to an annual value, are 15 percent below the annual estimate made by respondents. Respondent estimates of total annual vehicle travel is close to the traffic census estimates. However, the general sense was that the public is not efficient at estimating total travel miles. There does not appear to be systematic bias, either in over- or under-counting. They believe that what they call "bunching" of travel strongly affects the estimate. Bunching is the concentration of travel around certain periods of the year, such as major holiday weekends.

An interesting innovation in Denmark is a national auto occupancy counting system with roadside observers at points defined by a cross-classification matrix of 140 categories, based on road type, time-of-day grouping, season, and urbanization category. The system covers 70,000 km of road. The marginal cost of this activity, which is conducted in conjunction with other activities is 500,000 DK per year (about 100,000 US$).

Practicality of obtaining road class information for individual trips:

In France, they ask type-of-road questions. In 1973–1974, they asked a question about the share of miles traveled on urban roads; in 1981, they tried to obtain data about trips by road type and found it difficult. In 1994, they requested this information for yesterday's travel and last weekend's, as well. The long-trip survey also records road-class type for trips made in the previous month.

3.4 Method Questions

Nature of sample frame, in each case:

The UK NTS sampling is a two-stage design keyed to the national postal code register, which contains addresses of all structures. Generally, about 20 observations are drawn from each of 240 of the 8000 postal code areas, using zero-vehicle households and auto ownership as controls. The LATS survey used the postal code register with about 72 responding households per electorial ward.

The Danish survey is a continuous survey of 1800–2300 persons per month (the sample size varies, monthly) and is designed to be used at the county level. Most notably, this survey is person-based rather than household-based. The central element in its design is the existence of a central registry of persons for the entire country, kept by the Ministry of the Interior. This database contains birth information, present address, household type, occupation/industry, hours worked per week; citizens are responsible for ensuring their data is up-to-date. These files are not available to the private sector. The personal registry is the frame for a simple random sample.

Eligible persons in the survey are those from 6–75 years of age; children under 12 are assisted in their responses. Special surveys of about 500 observations each are done for children under 5 and adults over 75 years of age, i.e., those needing assistance to travel and to respond. These are done every six months. As a result, this includes some survey samples of persons in group homes, e.g., nursing homes. These special surveys are contracted to a marketing firm. The survey is part of the monthly omnibus survey operated by the statistics agency, primarily because of quality and cost savings.

As in other Scandinavian countries, Sweden maintains a personal registry system that forms the centerpiece of their statistical system. The registry has been in place since the 1600s. It now contains an identification number, name, address, citizenship, income, date of last marital status, country of birth, and a linking code to connect persons in the same household. There are, in fact, nine registers: population, schools, death, taxes, employment, families, enterprises, education, and property taxes. In sample selection, 8000 persons were drawn from the register, with the effect noted in other survey plans that sampling persons permits some household characteristics to be obtained but not necessarily household travel data.

France does not have registries that can be used for sampling, so they use census files updated by new construction data. They use a two-stage sample design, based on primary sampling units selected to be representative in 22 program regions of the country. All central cities over 100,000 in population are included the sample. The stratification criteria are region, metro area size, and car ownership.

Telephone interviewing versus personal face-to-face interviewing:

The UK National Travel Survey is described as a seven day face-to-face survey using diaries as memory-joggers and as recording devices. Because of a relatively low (88 percent) household phone ownership rate in the UK, the National Travel Survey uses face-to-face interviewing. The participant

receives a general letter informing them of selection, followed by a placement interview to obtain household, individual, and vehicle data. Persons of 11 and above receive their own diaries, and about three or four days later the travel week begins. Interviewers call to confirm that the householders understand their requested activities and pick up the forms in the following week, with a four-day goal to complete pickups. Some maintain that the survey is too large to permit phone interviewing.

They decided that a seven-day survey was optimum. An unsupported, retrospective survey can cover only two or three days, at most, because competent recall beyond that is limited. Their goal of 1994 is to get to Computer Assisted Personal Interviewing (CAPI) because of anticipated potential quality, speed, and cost benefits. CAPI is used in other government surveys, for example, a labor force survey and a crime survey.

The LATS survey was conducted as a paper-and-pencil interview (PAPI). CAPI was considered, but at the time the decision was made, the technology was still in its infancy and the UK lacked experience in its application to large-scale surveys. Computers were still expensive and heavy, and use of CAPI was not cost-effective for a one-time survey. For a small survey of 1000 observations to update trip rates, or for preference surveys, CAPI was attractive. Further, if they were to start today, they would seriously consider CAPI. CATI approaches would not be useful because of the low phone ownership rates and because a large part of the survey focused on the needs of minorities, who were even less likely to have phones. Survey length was also a concern.

The Danish survey design is based on Computer Assisted Telephone Interviewing (CATI) and is conducted by the Danish Statistical Office as part of the national Omnibus survey, which covers many subjects. The nation has a 93 percent rate of telephone ownership among households. A significant benefit of the use of the national personal registry, which lists everyone in the country, for a sample frame in the design of the survey is that those households without phones are identifiable by address. They can be contacted by mail and arrangements made for alternative means to collect survey data.

In Denmark, four alternative collection designs were considered: an eight-month survey using four panels conducted quarterly, a system for respondents to call in trips to a phone recorder, a face-to-face interview, and a diary mailback. In one case, they considered having a phone interview with respondents to collect the trips they had previously recorded in a diary. All of these approaches had weaknesses and were rejected.

Among the survey choices of phone, mail, or face-to-face, the Netherlands researchers found travel surveys too complex for phone interviewing, mail too low in response rate, and thus preferred the more expensive face-to-face approach. This added pressure to use panels because of the lower cost per interview in panels compared with other face-to-face approaches.

The Netherlands National Travel Survey was developed with the registry of addresses serving as the framework. The survey structure included mailing of an introductory recruitment letter, a CATI interview, mailing of a diary, completion of diaries by

persons over 12 years of age, two reminder letters, and a mail return of diaries. In the first recruitment interview, information was obtained on demographics, auto ownership, and driver licenses. Standard three-level surveying was conducted—household, person, and trip data collection. They had an 80 percent positive response to the recruitment letter and a 75 percent return of diaries, for an overall 60 percent response rate. The original survey design was developed as a face-to-face procedure in 1978 but shifted to phone in 1985 and has remained in that format since.

The Swedish approach in past surveys included an introductory letter and a one-day mind-jogger diary, distributed a day in advance of the travel survey date. The day after the travel date, an interviewer conducted a pencil-and-paper interview (PAPI) with the respondent to complete the actual questionnaire. Face-to-face interviews were preferred because of geographic and other complexities of travel surveys. It was determined that, in a face-to-face situation, interviewers and respondents could share maps, calendars, and other aids.

The cost of face-to-face interviewing approaches has become a major factor. As a result, interest has turned to a phone-based continuing survey approach. The new Swedish approach will involve using CATI-based data collection. Respondents will receive notification letters, with a diary for reference, and the day after the assigned travel date, data will be obtained by phone. The diary will not be mailed back. The concept of a computer terminal in households, referred to as CSAQ, to tutor and guide respondents will be considered for future surveys.

In France, phones are not used in the national travel survey because of the survey's extensive length and complexity, but phones are used in other surveys. About 95 percent of French households have phones, and surveys of buying moods, standards of living, and inflation trends use phone techniques.

In another survey, the French selected 500 vehicles, identified from their NTS, to test the utility of alternative electric vehicle regimes. Vehicles were selected based on use behavior similar to the capabilities of electrics: no long trips, second cars, cars purchased (new or used), less than 150 km per day average vehicle use. Short phone interviews were conducted with the selected households to obtain brief travel data on the vehicles of interest. The technique could be applicable to other fuel types as well.

In Germany, the European Travel Monitor survey is conducted every two months, by phone or face-to-face interview, with either 2000 respondents in large countries or 1000 in smaller areas. A six-month recall period is used for all overnight trips. Phone interviews are used where phones have a higher-than-95 percent ownership rate among all households. In response to questions about differences noted in phone and face-to-face interviewing approaches, phone surveying often gets higher trip rates for business purposes, yielding a business share of travel of 15 percent. By contrast, face-to-face methods yield about 10 percent. This difference is attributed to the greater accessibility by phone of male business travelers. A test will be conducted in Spain in 1994 in which 3000 face-to-face and 3000 phone interviews will be conducted, which would provide further insight into these differences.

At SocialData, Dr. Brög's view is that his preferred approach is a 365-day-per-year, one-day survey, based on a self-administered, mail-out/mail-back surveying system. Respondents use a diary provided in advance of the survey date. He feels that many survey managers are more interested in what information they would like to have, rather than what "the customer," i.e., the respondent, is willing to tell. Current methods involve a phone call timed to reach the respondent when the survey form arrives in the mail, followed by additional followup calls to gain greater response. They also use phones to clarify and expand data received via the mailed-back questionnaire.

Are out-of-area visitor trips collected? How?

In almost all countries contacted, no attempt is made to survey visitors. In several countries, roadside surveys are used extensively. If the cars stopped contain foreign visitors, their travel activity data is recorded.

Sweden plans a hotel register for surveying tourists. They will get outbound international Swedish travel in the national travel survey.

In France, a border-crossing survey was conducted in 1989–1990 for all outbound travel. The questionnaire was completed in the car at border-crossing stations, airports, and rail stations. Both French nationals and foreign visitors completed the questionnaire of about six pages in length and provided in seven languages.

The French used an innovative concept: foreign visitors were asked to trace their travels in France on a specially prepared route map of the nation, in a roughly 8½ × 11 format. About 35,000 maps were obtained over the course of a year from March 1989 to April 1990. Only about 10–15 percent did not contain usable information. These maps were processed by tracing over them on a computer tablet that had been encoded with the national highway network. Trips were encoded directly into segment and trip-file formats. As many as eight overnight stops were encoded as well. Processing took about one minute per map, with operators working four-hour shifts. Overall, they were pleasantly surprised that their approach worked as well as it did. They indicated that the VMT observed matched other sources of information. The survey will be the subject of a major report of the Ministry of Tourism. They have conducted similar mapping surveys for trucks.

Experience with the use of respondent diaries:

In the UK, NTS data indicates that trip diaries get more trip observations than alternatives.

The idea of a diary was tested in Denmark but rejected. The diary approach was found to be inflexible, and required respondents to define questions in their own way for difficult materials, such as linked trips, whereas phone interviewers can explain and react quickly. It was also noted that, despite a high rate of literacy, 10 percent of the population has difficulty with forms and other complex material.

In Sweden, the diary was regarded as an effective complement to the household survey, but it was not effective when used alone. About half of respondents used the

diary for remembering, but the value was seen as guiding other respondents to the necessity for detailed responses as well. The Swedish dislike seven-day recall surveys because of poor recall but felt that week-long travel diaries might prove effective. Also monthly-recall level decay was cited, as follows:

Month 1	100 percent
Month 2	96 percent
Month 3	93 percent
Month 4	89 percent
Month 5	83 percent

Measuring annual vehicle travel—respondent estimates versus odometer readings:

The view in the UK is that the need for annual VKT/VMT data is congestion-driven. Also, these data are needed for accident-exposure rate calculations. Data had to be collected every day of the year to obtain a 365-day-per-year data set. (Shorter surveys focus on September as a "good" month.) Thus, "typical" and "average" data are not the same. Weekend travel is a strong factor in varying travel volume patterns.

In Sweden, high-quality comparability checks were observed in total annual travel volume (VKT) as estimated by trips multiplied by trip length, compared to traffic counts, and to air and rail traffic counts. Also, validation checks against driver records and vehicle license records showed high levels of agreement. Odometer readings were obtained in the survey but were not used.

In the Netherlands, a car panel survey, referred to as PAP, used a sample drawn from the national vehicle registration file. It was designed as a panel survey conducted by telephone; four panels were assembled and called four times to collect monthly odometer readings. There was a 70 percent response rate in the first wave of interviewing, and the panel was refreshed each month. Attrition was low, roughly 15 percent per year for four years, and by 1992 only 55 percent of the original group remained. About 5000 vehicles yielded 11,000 observations of monthly VMT. The demography of the household linked to the vehicle and the vehicle characteristics were developed to support analyses. Analyses were conducted regarding VKT, car type, fuel type and consumption, year of vehicle, and household demographics and characteristics of the owner. Total costs were roughly 400,000 guilders per year (about 236,000 US$).

In France, a diary for a randomly selected vehicle from the household is left for a week between interviewer visits—vehicle descriptions, age, purchase history for all vehicles owned since 1990, trips and odometer readings each day, and for each trip, are obtained. Second vehicles are oversampled because their behavior is a better source for potential electric vehicles or other alternative-fuel vehicles.

Extent of use of panel surveys:

The Netherlands has extensive experience with using panels to collect travel data. Two perspectives on the experience with the National Mobility Panel were presented. Dr. Henk Meurs, consultant to the Transport Research Centre, described the panel as 2000 households with approximately 4000 persons over 12 years of age. The primary objective of the panel, which ran from 1984 to 1989, was to monitor trends in personal

mobility, particularly behavioral reactions to national transportation policy changes. The need to examine these changes over time led to the panel approach, designed to operate in ten waves over four years. This was in response to a prospective transit fare increase to be introduced over a period of four years. Parliament agreed to the proposed fare changes but mandated monitoring of the first year's effects before the second increase could become effective. (The second phase of increases were subsequently canceled.) Panels were conducted parallel to the cross-sectional national travel survey, in operation since 1979.

Dr. Meurs outlined the alternative characteristics of panels versus cross-sectional surveys and felt that the panel approach was efficient in tracing discrete time events and actual durations. Among the emerging issues where this would be valuable were travel concerns of the aging and rates of turnover in the vehicle fleet.

Panel effects, or panel conditioning, wherein panelists begin to respond differently because of the survey observing their behavior, was noted as an additional problem. Panels needed refreshment with new respondents in each wave. Among other methodological issues are the choices between individuals or households in panels, requirements for panel size, and refreshment procedures.

Panels could be applied to future issues, such as use of HOV lanes; before-and-after studies of land-use changes; the study of the adverse effects of policy, e.g., the creation of rail lines generating increased auto travel; the study of supply/demand interactions; the study of consumer attitudes, including elasticities and the value of time; and modeling in new ways that have not yet been fully validated.

A panel studied the effects of free transit provided to all students ages 18 to 27. The purposes of the study were to obtain before-and-after trend experience regarding transit use, obtain descriptive statistics, and perform cohort analyses.

In Sweden, a panel concept is being considered for the new travel survey. Panels are used extensively in other national surveys, and the Swedish view is that person-based panels are preferable to household panels. Due to family changes, households are considered too dynamic.

The French view was that panels were effective for short-term questions, for example, measuring vehicle fleet turnover. They replenish a quarter of the panel each wave, and they felt that weekly panels overloaded the respondents. A major goal of their survey approach was to recognize that trips were disproportionately produced by some groups in society and they did not want the survey instrument to discourage high-frequency users.

Methods of geographic identification and summarization:

In the UK national survey, geographic identification is coded to the county level and restricted to the 63 counties, in the interest of protecting confidentiality.

Geocoding was not key in the NTS, but was a major factor in the cost of the UK LATS—over 3 million addresses needed to be coded. Coding was semiautomatic with several iterations of matching to guides produced by a private firm from sources

provided by the Post Office. The LATS group did not retain the geocoding capability. Matches were to x-y coordinates of a one meter grid with converters to British postal codes, and then to all geographic identifiers (zones, wards, etc.). Geocodes were used to edit and test data and to calculate speeds. Postal codes cluster units of 1000 addresses or so, the equivalent of our "ZIP + 4" system.

In Sweden, they plan to obtain detailed geography for trip destinations in the national survey and code them to coordinates and to a converter file. The national road system has also been digitized. The nation consists of 284 communities in 24 counties, with 3 million real estate properties throughout the country. Statistics Sweden has identified x-y coordinates for each. Some cultural sites, such as main houses or important historical structures, are also given coordinates. The plan is to have boundary coordinates by 1996. Areas within the country have their own geographic base files for coding purposes, and all data are open to all users. Much of the work is underwritten by the telephone company. The coordinates are included in the land registration files. They are currently trying to develop x-y coordinates for enterprise locations; so far, they have achieved 50 percent match-rates encoding enterprises. Address matching has been limited in development. A national atlas has been developed in a computer format, which is basically a book. Some of the data can be manipulated, but most are simple data displays.

In France, trip identification addresses are coded to the 36,000 municipalities level only; areas are classified into six types of rural areas and five or six types of urban areas.

Other comments:

In Denmark, roadside surveys to obtain origin-destination data are a low priority because of expected political reaction. Their goal is to link such data collection more accurately with national travel surveys to gain better use of the data.

Another Netherlands survey was a day-trip survey undertaken to obtain greater understanding of tourism activities. Long trips of more than two hours' duration for recreational purposes, not including visits to friends and relatives or overnight stays, were collected by phone for a two-week or one-month recall period. About 90 percent of the trips collected were usable. The first data will be available in August 1994.

In Sweden, in response to a question on survey timing, researchers indicated that pretesting began in October 1993, evaluation performed over the Christmas holidays, and a full-scale field test conducted in January 1994. There is a data integrity agency that reviews data programs but it does not have a protracted content or design review process. The contrast in speed to the United States is notable.

The French survey, funded by French Telecom, the national telephone company, contains an experimental set of questions on the communications capabilities of the household, phones owned and used, etc. This may be useful for looking at substitutes for transportation.

In meetings with French officials, they indicated that, in the long term, there would

need to be a public intercity travel survey for all of Europe. The various multinational groups were forming an intersecretariat group to coordinate activities. This included Eurostat, the statistical agency of the EC, the Economic Commission for Europe of the United Nations (ECE/UN) in Geneva, and the European Conference of Ministers of Transport (ECMT/OECD). The decline in border formalities has hurt data collection. Conflicts in approaches to solving the problem have arisen. Roadside interviewing regained popularity on the main "E" road networks and national networks. A goal was to develop flows for the 90 regional planning areas of the European Union.

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Finally, special thanks are given to TTEC's liaison office, American Trade Initiatives, Inc., for arranging the meetings, planning the travel, and escorting the team.

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Responsibilities include developing and directing a data dissemination program, designing a national intercity travel survey to be conducted in 1995, and acting as principal liaison to the Bureau of the Census for the transportation items collected in the 2000 Census.

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Served seven years as Chair of the National Academy of Science's Transportation Research Board Committee on Transport Data and Information Systems.

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Appendix C. Sample Introductory Letter

13 August 1993

Mr. Christian Reynaud
INRETS

Dear Mr. Reynaud,

Under the sponsorship of the U.S. Federal Highway Administration (FHWA), a European Study Tour of U.S. specialists in transportation surveys plans to visit selected European countries during the period 12–23 October, 1993. This Study Tour is an element of the FHWA's International Program, authorized by legislation of the Congress of the United States entitled The Intermodal Surface Transportation Efficiency Act of 1991. The Study Tour is coordinated by the Transportation Technology Evaluation Center (TTEC), which was established to support the FHWA's International Programs Office.

The Study Tour will conduct an in-depth review of methodologies and procedures used in large-scale surveys conducted in Europe, as well as exchange information with European counterparts in the design and development of such surveys. The review will encompass results of former personal transportation surveys, methodological approaches, survey planning consideration, funding and operational issues, privacy issues, statistical sampling, and expansion of survey results. The information and insights obtained will contribute to preparations in the United States for two large-scale national surveys planned for 1995: the National Personal Travel Survey (NPTS) and the Passenger Flow Survey (PFS).

Upon completion of the study tour, the Panel will also publish a report for distribution throughout the domestic and international transportation communities.

The Panel will be composed of the following individuals:

Mr. David McElhaney, FHWA Office of Highway Information Management
Mr. Frank Jarema, FHWA National Data Management and Dissemination Div.
Mr. Phil Fulton, FHWA Bureau of Transportation Statistics
Mr. Charles Purvis, Metro Transportation Commission, Oakland, California
Mr. Ron Tweedie, New York Department of Transportation
Mr. Alan Pisarski, Advisor to FHWA for Transportation Surveys

The Panel's schedule tentatively includes a one-day meeting in each of five or six European countries. Your name was referred to us as a potential point of contact regarding guidance as to which European countries would be most beneficial in meeting our goals. We would very much appreciate your advice.

I will contact your office via telephone tomorrow to answer your questions. Thank you for your time and consideration.

Sincerely,

John O'Neill
TTEC-Liaison Officer

ENCL: FHWA Letter
[not included]

Appendix D. Glossary of Special Terms and Acronyms

Survey Terms

CAPI	Computer Assisted Personal Interview
CASQ	Computer Assisted Self-administered Questionnaire
CATI	Computer Assisted Telephone Interview
CES	Consumer Expenditure Survey, United States
GLTS	Greater London Travel Survey
NPTS	Nationwide Personal Transportation Survey, United States Survey
NTS	National Travel Survey
O-D	Origin-Destination Survey
PAPI	Pencil and Paper Interview
PC-AXIS	software for tabulation and suppression analysis

Transport Terms

E roads	European roads extending across international borders
HOV	High Occupancy Vehicle
PKT	Person Kilometers of Travel
VKT	Vehicle Kilometers of Travel
VMT	Vehicle Miles of Travel
X-Y	grid coordinates

Agencies

AVV	Transport Research Centre—Mininstry of Transport and Public Works, The Netherlands
BTS	Bureau of Transportation Statistics, U.S. DOT
DCSO	Danish Central Statistics Office (Statistics Denmark)
DOT	Department of Transport, UK (or United States)
EC	European Economic Community
EUROSTAT	Statistical agency of the European Union
ECE/UN	Economic Commission for Europe of the United Nations
ECMT	European Conference of Ministers of Transport
ETIC	European Travel Intelligence Center, operator of ETM
ETM	European Travel Monitor, intercity travel survey
FHWA	Federal Highway Administration, U.S. DOT
EU	European Union (EC, since January 1, 1994)
HMSO	Her Majesty's Stationery Office, UK
INRETS	National Institute for Research in Transport and Safety, France
LATS	London Area Transport Study
LRC	London Research Centre
MPO	Metropolitan Planning Organization

NRTI	Road Transportation Research Institute, Sweden
OECD	Organization for Economic Cooperation and Development
OEST	Observatory for Economics and Statistics in Transport, France
OPCS	Office of Population Census and Surveys, UK
SOCIALDATA	German consulting firm
SCB	Statistics Central Bureau (Statistics Sweden)

Appendix E. Meeting Agendas

THREE-PART TRAVEL SURVEY CONFERENCE FOR DELEGATION FROM THE USA

Conference Title: National and Local Travel Surveys

First Part: The GB National Travel Survey

Date: Monday 11 October 1993
Time: 9:30am - 12:30pm
Location: Conference Room S, Room S4/03, 2 Marsham St, LONDON SW1
Those expected:

From USA	UK
David McElhaney HPM	Kerrick Macafee DOT
Frank Jarema HPM	Paul Niblett DOT
Phil Fulton BTS	Amanda Wilmot OPCS
Ron Tweedie NY DOT	Nick Bateson OPCS
Chuck Purvis MTC	Sharon Bruce OPCS
Alan Pisarski TTEC	Nicola Iles OPCS
John O'Neill TTEC	

NB.

HPM	Office of Highway Information Management, FHWA
BTS	Bureau of Transportation Statistics
NYDOT	New York State Department of Transportation
MTC	Metro Transportation Commission
TTEC	Transportation Technology Evaluation Center
DOT	Department of Transportation
OPCS	Office of Population Censuses and Surveys

Timetable

9:30	Introduction inc. uses of NTS	Kerrick Macafee
9:45	Data collection	Amanda Wilmot
10:30	Break	
10:45	Data processing and dissemination	Paul Niblett
11:30	Methodological choices	Kerrick Macafee
12:15	Question time	ALL
12:30	LUNCH	

Speakers have agreed not to speak for longer than 30 minutes, which should leave plenty of time for questions and debate both during and toward the end of each 45-minute segment. Some of the topics to be covered by each speaker are listed below. Those put forward by John O'Neill are in bold letters.

We are aware that there are some differences between U.S. NTSs and ours. In particular, the U.S. uses CATI, fairly normal for U.S. survey operations, and the U.S. NTSs are conducted every 7 years or so, not continuously as in GB. We will endeavour to keep our talks as relevant to the U.S. experience as possible.

Amanda Wilmot

- Advantages and disadvantages of telephone interviewing versus personal interviewing.
- Advantages and disadvantages of using the respondent diary method.
- Escort journeys.
- Estimating distances of walk and other journey stages.
- Incentive/low response rates in city areas.
- Journeys, subsidiary journeys, etc.
- The advantages of ACPI over PAPI (as part of the discussion of why CATI is not suitable in Great Britain?).

Paul Niblett

- Work-trip itinerary (how to handle respondents who make many daily trips as part of their occupation, e.g. delivery drivers).
- The level of detail obtained for each trip.
- The definition of "trip" used to describe person and vehicle movement, i.e., difference between journey and stage.
- Procedures for estimating vehicle-miles-of-travel/person-miles-of-travel.
- Whether journeys under one mile or so should be included in analyses of journeys that include walking journeys.
- Patching the database.
- How to treat series of call journeys.
- Allocation of costs of season tickets over travel week.

Kerrick Macafee

- The collection of national-level data and detailed geographical origin-destination data for local usage.
- The practicality of obtaining road-class information for individual trips.
- The collection of long-distance travel data and local travel data in the same survey.
- Measuring annual vehicle travel (respondent estimates versus odometer readings).
- Institutional responsibility for national travel surveys (e.g., central statistics bureaus, transportation agencies, etc.) and application of survey results.
- Reweighting data.
- Income equivalent scales.
- Continuous versus ad hoc travel surveys.

Second and Third Parts

I understand that the second part of the conference will be an afternoon session held at the University of Westminster. This will be chaired by a transport consultant, Prof. Peter Jones.

The third part of the conference will be on the following morning and will concentrate on local transport surveys, such as the London Area Transport Survey (LATS). It will be handled by Peter Capell in his office in Romey House.

VISIT TO UK DEPARTMENT OF TRANSPORT

BY NATIONAL PERSONAL TRANSPORTATION SURVEYS PANEL

12 OCTOBER 1993

THE LONDON AREA TRANSPORT SURVEY (LATS)

Purpose of Meeting

Informal discussion of how experience with design and implementation of LATS is relevant to USA survey plans.

AGENDA

1. Introduction to LATS
    - Data requirements
2. General Design Issues
    - Household versus "on mode"
    - Sample sizes
    - etc.
3. Methodology
    - Household Survey
        - Pilots
        - Use of CAPI
    - Cordon diary
    - Goods Vehicles
    - Other
4. Household Survey Questionnaire
5. Address Coding
6. General Questions

Conference: Danish Travel Surveys
Wednesday, 13 October 1993, American visit

10:00 Welcome and presentation, Erik Toft, Ministry of Transport

10:15 The Danish National-level Personal Travel Survey, special surveys to collect information about children and old people, institutional responsibility, Pia Berring, Ministry of Transport

10:45 The collection of national-level survey data, geographic stratification, advantages and disadvantages of telephone interviewing versus personal interviewing and of using the respondent diary method. Johannes Noordhoek, Danmarks Statistik

11:10 Break

11:15 The Danish travel habits, results and the travel survey, Linda Christensen, National Environmental Research Institute

11:40 Collection of long-distance travel data in the same survey, Erik Bache, Danish State Railways

12:00 Lunch

13:30 Subsampling at the local level, monthly indicators of transport activity, the practicality of obtaining road class information for individual trips, Knud Erik Andersen, The Danish Road Directorate.

13:50 How to get information about safety aspects from the travel survey, Inger Marie Bernhoft, Danish Council of Road Safety Research

14:10 Estimating vehicle-miles-of-travel/person-miles-of-travel, special analyses about yearly vehicle-miles-of-travel and passengers in cars, Erik Toft, Ministry of Transport

14:30 Questions and discussion

Persons participating in the conference "Danish Travel Surveys"
Wednesday, 13 October 1993

David McElhaney, Office of Highway Information Management, FHWA

Frank E. Jarema, National Data Management and Dissemination Division, FHWA

Phil Fulton, Bureau of Transportation Statistics

Ron Tweedie, Division of Transportation Planning

Chuck Purvis, Metro Transportation Commission

Alan Pisarski, Report Facilitator

Linda Christensen, National Environmental Research Institute

Erik Bache, Danish State Railways

Johannes Noordhoek, Danmarks Statistik (Danish Central Statistics office)

Ann Sønder, Danish State Railways

Inger Marie Berhoft, Danish Council of Road Safety Research

Knud Erik Andersen, The National Road Administration

Erik Toft, The Ministry of Transport, Office of Development

Pia Berring, The Ministry of Transport, Office of Development

Visit of the Survey Panel to the Netherlands
Friday, 15 October 1993, Transport Research Centre, Rotterdam

Program (preliminary)

10:30 Introduction and welcome
Ambrosius Baanders, member of the Management Team of the Transport Research Centre (AVV) Ministry of Transport and Public Works
10:50 Introduction of the survey panel: the study tour, information about the two large-scale national surveys planned for 1995 (NPTS and PFS)
11:10 Experiences with national surveys in the Netherlands
Dr. Henk Meurs, Consultant, MuConsult Utrecht
11:30 Longitudinal panels in policy analysis
Prof.dr. Toon van den Hoorn, Head of the Strategic Studies Division, Ministry of Transport and Public Works, Transport Research Centre (AVV)
11:50 Discussion →1 h
12:50 Lunch

14:00 The Study of the "OV-jaarkaart" [Annual Public Transportation Pass, ed.]
Frances Cheung, Consultant Public and Private Transport, Ministry of Transport and Public Works, Transport Research Centre (AVV)
14:20 The National Travel Survey (OVG) and Passenger-Cars Panel (PAP)
Dr. Frans Hendrikx, Head of Traffic and Transport Division, Bureau of Statistics
14:50 Discussion →1 h

Participants

Frances Cheung	Consultant Public and Private Transport, Ministry of Transport and Public Works, Transport Research Centre (AVV)
Dr. Frans Hendrikx	Head of Traffic and Transport Division, Central Bureau of Statistics
Eric den Hoedt	Head of Tourism Division, Central Bureau of Statistics
Prof.dr. Toon van der Hoorn	Head of the Section Strategic Studies, Ministry of Transport and Public Works, Transport Research Centre
Dr. Henk Meurs	Consultant, MuConsult Utrecht
Ger Moritz	Researcher Traffic and Transport, Central Bureau of Statistics
Ursula Blom	Consultant Strategic Studies, Ministry of Transport and Public Works, Transport Research Centre (AVV)
Aad Rühl	Head of Directorate General of Transport, Ministry of Transport and Public Works

National Personal Transportation Surveys

Agenda for the seminar 18 October 1993 at Statistics Sweden, Stockholm, Karlavägen 100, Room B616 (Blåsippan).

0830	Arrival, coffee	
0900	Presentations, approval of the agenda, etc.	Krister Spolander SCB
0930	Use of and general requirements of data on personal transportation in Sweden	Henrik Swahn The National Road and Transport Research Institute
1000	The National Swedish Surveys on personal transportation in the 1970s and 1980s: objectives, methods, results and experiences	Amie Lindeberg SCB
1015	Coffee break	
1030	The new Swedish Survey 1994–1998: characteristics and development	Amie Lindeberg, Henrik Swahn
1100	Discussions	
1145	Lunch	
1300	Geographic origin-destination data and the use of GIS	Bo Justusson SCB
1345	General discussion on methods of data collection, data processing and analyzing, data presentation	
1500	Coffee break	
1530	Discussions	
1700	End of the seminar	

Appendix F. Documents Received

United Kingdom

Meeting with Mr. Kerrick Macafee

Copies of slide presentation materials
National Travel Survey questionnaire
National Travel Survey 1992 — Definition Manual

Reports:

National Travel Survey 1989/1991
National Survey Technical Report, July 1988 - December 1991

Meeting with Professor Peter Jones

Annual report of the Transport Studies Group; a brief resume of the functions and activities of the group at the University of Westminster

Meeting with Mr. Peter Capell

Office Organization Chart
Home Interview Survey Form
Roadside Survey Interview Form
Program Description — 1991 London Area Transport Study
Draft early release of Home Interview Responses

Reports:

Road Traffic Statistics, Great Britain 1993
Transport Statistics, Great Britain, 1993 edition

Denmark

Summary copies of presentation transparencies
Copy of survey questionnaire

Reports:

The Bicycle in Denmark, 1993, Present Use and Future Potential
Danish Transport Action Plan, January 1991
Road Transport Statistics 1992
Road Directorate — Mini Information 1992
1992 Traffic Map Report

Papers:

"Summary of Danish Transport and Travel Habits"
"Transport Habits of Children and Adolescents"
"Transport and Travel Habits of the Elderly"

Netherlands

Overview of Tasks and Organization — the Netherlands Transport Research Center (AMV)
Panel Surveys in Transport — copy of slide presentation

Reports:

Netherlands Official Statistics
The National Travel Survey in the Netherlands
The National Model System for Traffic and Transport

Papers:

"Extent to Which People Can Estimate Their Trip Distance"
"Differences in Estimates Due to Changes in Method of Data Collection"
"Fares Revision and Consumer Response in the Netherlands"
"Public Transport Pass for Students"
"The Netherlands — Ground Transport Below Sea Level"
"The Value Added of Longitudinal Panels in Policy Analysis"

Sweden

Statistical Databases Description
Statistics Sweden Organization Chart
Map of National Population Densities
GIS Guide
A Selection of Publications 1993 — Statistics Sweden

Reports:

Travel Patterns Survey (TPS) 1984/85

Mini Reports:

Sweden in Figures 1993
Women and Men in Figures 1990
Education in Sweden 1991
The Swedish Environment

Data Sheet on PC — Axis Data System
PC — Axis Description Paper
PC — Axis Research Paper

France

Meeting with Mr. Jean-Loup Madre

National Travel Survey 1993/94 Questionnaire
Methodology Regarding Origin — Destination Traffic Studies
The French National Travel Personal Survey

Meeting with Mr. Michel Houee

Transportation Statistics Sources
Trips in Paris
Organization of the OEST
Brief Analysis of the Status and Regulation of Transportation in Europe

Germany

Meeting with Ms. Andrea Börngen

1992 European Travel Monitor Questionnaire
Description of ETIC (European Travel Intelligence Center)

Meeting with Dr. Werner Brög

Listing of publications
Sample questionnaires with mailing material

Reports:

Assessment of Mobility
Short Distance Travel — The Importance of Non-Motorized Transport for Mobility in Our Cities
Twenty Good Reasons for Driving a Car in the City
Mobility in Germany
Perception of Mobility
Opportunities for Bus and Rail
Comparative Assessment of Household Surveys
Concerning Commuter Traffic (KONTIV 1976, 1982, 1989)
German Institute for Economic Research, October 1993 (Received subsequent to October visit)

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