

CHAPTER 1. INTRODUCTION

2001 NHTS

This User's Guide provides details of the 2001 National Household Travel Survey (NHTS¹). The survey provides information to assist transportation planners and policy makers who need comprehensive data on travel and transportation patterns in the United States. The 2001 NHTS updates information gathered in prior Nationwide Personal Transportation Surveys (NPTS) conducted in 1969, 1977, 1983, 1990, and 1995 and the American Travel Survey (ATS), conducted in 1977 and 1995.

DATA FILES

Publicly available data files containing the data from the 2001 NHTS have the following general features:

- it is a microdata data set, which contains the record of each interview (with information deleted or suppressed that would identify the specific person or household),
- the January 2003 (Version 1) data are arranged in four hierarchical files (household, person, vehicle and travel day) to facilitate analysis,
- the Version 2 data are arranged in five hierarchical files. This version includes the travel period file,
- the January 2004 (Version 3) data are arranged in four hierarchical files. However, unlike the Version 1 and 2 data sets, this data set includes both data from the national sample and the nine add-on samples. Travel period data was not included, in the January 2004 release, but will be released separately by the Bureau of Transportation Statistics (BTS), and
- the data are available in the Statistical Analysis System (SAS), standard ASCII, and DBF format.

¹ See Appendix E for a list of all abbreviations used in this User's Guide.

USER'S GUIDE

This guide includes descriptions of the survey procedures and methodology used for the 2001 NHTS, the questionnaire, the public use data files, and the weighting procedures for 2001 NHTS data. Appendices provide a dictionary of all variables in the data files, data file code books, Proc Content Listings, control totals, sample tables, glossary of NHTS terms and abbreviations, a copy of the 2001 NHTS questionnaire, and additional background information.

PUBLICATION SCHEDULE FOR THE NHTS DATASET

Version 1 – Released in mid-January 2003. Contains data on the 26,038 households from the national survey and includes data on the households, persons, vehicles and daily (travel day) trips.

Version 2 – This dataset was provided to DOT in the summer of 2003. It supplements Version 1 with the long-trip (travel period) data for the national sample households, neighborhood characteristics data, odometer readings and fuel economy data for household vehicles. Like Version 1, Version 2 contains data on the 26,038 national households and represents the full scope of subject matter for the NHTS dataset.

Version 3 – Released in January, 2004. Supplements Version 2 with the data from approximately 40,000 add-on interviews, conducted in nine geographic areas (Baltimore, Des Moines, Hawaii, Kentucky, Lancaster PA, New York State, Oahu, Texas and Wisconsin). However, it is limited to four files (household, person, vehicle, travel day trips) as BTS has assumed responsibility for the release of the Travel Period and Most Recent Trip data files.

This User's Guide is intended to serve as the documentation for January 2004 release (Version 3) plus the Travel Period file

1-A. SURVEY SPONSORS

The 2001 NHTS was conducted under the sponsorship of three agencies of the U.S. Department of Transportation:

Bureau of Transportation Statistics (BTS),
Federal Highway Administration (FHWA), and
National Highway Traffic Safety Administration (NHTSA).

BTS and FHWA together had the lead role in coordinating the survey.

1-B. PURPOSE AND SCOPE OF THE SURVEY

1-B.1. DATA COLLECTED

The NPTS and ATS have served as the nation's inventory of daily and long-distance travel. The NHTS combines and replaces these two surveys. Data is collected on daily trips taken in a 24-hour period, and includes:

- purpose of the trip (work, shopping, etc.),
- means of transportation used (car, bus, subway, walk, etc.),
- how long the trip took, i.e., travel time,
- time of day when the trip took place,
- day of week when the trip took place, and
- if a private vehicle trip:
 - number of people in the vehicle , i.e., vehicle occupancy,
 - driver characteristics (age, sex, worker status, education level, etc.), and
 - vehicle attributes (make, model, model year, amount of miles driven in a year).

These data are collected for:

- all trips,
- all modes,
- all purposes,
- all trip lengths, and
- all areas of the country, urban and rural.

In addition to the data above, the 2001 NHTS also collected additional data on trips to a destination 50 miles or more from home (long-distance travel) that started from home and ended at home during a four-week travel period. Data collected on long-distance trips included all the data mentioned above for daily trips with the exception of travel time and the time of day the trip took place. Data on the location of overnight stops and access/egress to an airport, train station, bus station or boat pier were also collected. If no long-distance trips were taken during the four-week period, a series of questions were asked regarding the most recent long-distance trip prior to that four-week travel period.

1-B.2. USES OF NHTS

NHTS data are used to:

- quantify travel behavior,
- analyze changes in travel characteristics over time,
- relate travel behavior to the demographics of the traveler, and
- study the relationship of demographics and travel over time.

The NHTS data are used primarily for gaining a better understanding of travel behavior. The data enable DOT officials to assess program initiatives, review programs and policies, study current mobility issues, and plan for the future.

The NHTS is a tool in the urban transportation planning process; it provides data on personal travel behavior, trends in travel over time, trip generation rates, national data to use as a benchmark in reviewing local data, and data for various other planning and modeling applications.

The transportation research community, including academics, consultants and government, use the NHTS extensively to examine:

- travel behavior at the individual and household level,
- the characteristics of travel, such as trip chaining, use of the various modes, amount and purpose of travel by time of day & day of week, vehicle occupancy, and a host of other attributes,
- the relationship between demographics and travel, and
- the public's perceptions of the transportation system.

People in various fields outside of transportation use the NHTS data to connect the role of transportation with other aspects of our lives. Medical researchers use the data to determine crash exposure rates of drivers and passengers, including the elderly, who have heightened morbidity and mortality rates. Safety specialists study the accident risk of school-age children, particularly when they are travelling on their own by walking or biking. Social service agencies need to know more about how low-income households currently meet their travel needs.

1-B.3. SCOPE - WHAT THE 2001 NHTS INCLUDES

The 2001 NHTS data set includes², but is not limited to:

- household data on the relationship of household members, education level, income, housing characteristics, and other demographic information;

² The January, 2004 published data set does not include long distance data. BTS has assumed responsibility for publishing this data set.

- information on each household vehicle, including year, make, model, and estimates of annual miles traveled;
- data about drivers, including information on travel as part of work;
- data about one-way trips taken during a designated 24-hour period (the household's travel day) including the time the trip began and ended, length of the trip, composition of the travel party, mode of transportation, purpose of the trip, and the specific vehicle used (if a household vehicle);
- data describing round-trips taken during a four-week period (the household's travel period) where the farthest point of the trip was at least 50 miles from home, including the farthest destination, access and egress stops and overnight stays on the way to and from the farthest destination, mode, purpose, and travel party information;
- if no long-distance trips were made during the four-week travel period, data on the most recent long-distance trip by any mode and the most recent long-distance train trip;
- information to describe characteristics of the geographic area in which the sample household and workplace of sample persons are located;
- data on telecommuting;
- public perceptions of the transportation system;
- data on Internet usage; and
- the typical number of transit, walk and bike trips made over a period longer than the 24-hour travel day.

1-B.4. SCOPE - WHAT IS NOT INCLUDED

In the past there have been many requests for data that are closely related to, but are not available in the survey. Examples of the most common requests for data that are not included in NHTS are:

- information on costs of travel,
- information about specific travel routes or types of roads used,
- how travel of the sampled household changes over time, [Note: The NHTS is a cross-sectional survey, which means that different households

are selected for the sample each time it is conducted. The NHTS is not currently a longitudinal survey, which would involve tracking the same sample households over time.]

- information that would identify the exact household or workplace location. This information is collected but not published to protect the confidentiality of respondents, and
- the traveler's reason for selecting a specific mode of travel over another mode.

1-C. SURVEY COVERAGE

1-C.1. WHO IS AN ELIGIBLE PARTICIPANT

The NHTS is a survey of the civilian, non-institutionalized population of the United States. Sampling is done by creating a random-digit dialing (RDD) list of telephone numbers. An eligible household excludes telephones in motels, hotels, group quarters, such as nursing homes, prisons, barracks, convents or monasteries and any living quarters with 10 or more unrelated roommates.

Telephones in dorm rooms, fraternity and sorority houses were eligible provided the residence had less than 11 household members. Therefore, students who normally reside at school but were living at home for the summer were not considered household members at their parent's home.

Household members included people who think of the sampled household as their primary place of residence. It included persons who usually stay in the household but were temporarily away on business, vacation, or in a hospital. It did not include people just visiting, such as a college student who normally has been living away at school.

1.C.2. WHEN WAS THE SURVEY CONDUCTED

The 2001 NHTS for the national and New York add-on was conducted over a period from March 2001 through May 2002. The first telephone call to recruit a household in the national sample was made on March 19, 2001. Travel days were assigned for all seven days of the week, including all holidays. The first travel day assigned was March 29, 2001. The last travel day assigned was May 4, 2002. The assigned travel period for long-distance trip reporting was the four-week period ending with the travel day. So, the first travel period assigned was March 2 through March 29, 2001, and the last travel period assigned was April 7 through May 4, 2002.

Data collection for the 2001 Wisconsin add-on was conducted over a period from May 1, 2001 through May 6, 2002. The first telephone call to recruit a household was made on May 1, 2001. Travel days were assigned for all seven days of the week, including all holidays. The first travel day assigned was May 11, 2001. The last travel day assigned was May 3, 2002. The assigned travel period for long-distance trip reporting was the four-week period ending with the travel day. So, the last travel period assigned was April 6 through May 3, 2002.

Data collection for 2001 Baltimore, Des Moines, Hawaii, Kentucky, Lancaster PA, Oahu, and Texas add-ons were conducted between May 31, 2001 and July 5, 2002. The first household interview was initiated on May 31, 2001. The first travel day assigned was June 12, 2001. The last travel day assigned was June 28, 2002. Long-distance data was collected only for the Texas add-on.

1.C.3. WHAT TRIPS ARE INCLUDED

For the travel day portion of the survey, all trips reported by eligible household members in eligible households in the U.S. were recorded. Household members who were travelling outside the U.S. for the entire travel day were not asked to report their daily travel. However, households in the national sample, New York, Texas and Wisconsin add-ons were required to report their long-distance travel.

The designated 24-hour travel day starts at 4:00 am of the day assigned and continues until 3:59 am of the following day. On a typical day, 4 am represents the time

when the fewest number of people are in transit, thus allowing collection of more coherent data on trips.

For travel period, each household in the national sample, New York, and Wisconsin add-ons was provided a map showing a circle of 50 miles in radius around the household's home. Households were asked to include all trips where the farthest destination was at least 50 miles away from their homes (i.e., trips outside the circle) that ended during the travel period.

1-D. COMPARABILITY WITH EARLIER NPTS DATA

The 2001 NHTS continues the series of household travel surveys begun by the Department of Transportation in 1969 to measure every-day and long distance travel in the United States. The survey has evolved considerably over the years in both scope and methodology. This section of the User's Guide presents a summary of the characteristics of each of the six NPTS/NHTS surveys from 1969 through 2001. Exhibit 1-1 tabulates the key changes in the survey over time and includes information on the 1995 ATS in addition to the six NPTS/NHTS surveys.

1-D.1. CHANGES OVER TIME IN THE NPTS/NHTS DATA SERIES

1969 and 1977 – These surveys were similar in that the sampling frame was clustered (Primary Sampling Units) from retired Census surveys. Both were conducted as face-to-face home interviews using a pencil and paper questionnaire administered by field staff of the Census Bureau. The sample sizes were 15,000 and 18,000 households respectively, so both were sufficient to give a national picture of household travel.

Exhibit 1-1. Changes Over Time in the NPTS/NHTS Data Series

Sample Year	Sample Size (households)	Sample Selection	Interview Method(s)	Number of Contacts	Contractor	Travel Day Data (memory/diary)	Travel Period Definition	Unique Attributes	Response Rate	Add-Ons
1969	15,000	235 PSU's (primary sampling units) – outgoing panels of Census' Quarterly Housing Survey	in-home interviews; some telephone followup	one	Bureau of Census	from memory	all overnight trips ending during the 7 days before the travel day	- shortest NPTS questionnaire - asked about shopping trips to the main business district and typical school trips	Not available	none
1977	18,000	376 PSU's – outgoing panels of Census' Current Population Survey	in-home interviews; some telephone followup	one	Bureau of Census	from memory	all trips of 75 miles or more with a return home during the 14 days preceding travel day	- NPTS and the NTS (National Travel Survey) shared a common sample - mapping of motor vehicle trips and allocation of miles to urban and rural travel - lengthy and detailed questionnaire, including stops on long-distance trips	85.3% (21,033 eligible household units, 17,949 responding)	none
1983	6,500	376 PSU's – outgoing panels of Census' Current Population Survey	in-home interviews; some telephone followup	one	Bureau of Census	from memory	all trips of 75 miles or more with a return home during the 14 days preceding and including travel day	- more vehicle characteristics collected - designed to collect travel period and travel day trips occurring on the same day - relatively small national sample created comparability issues in the series	93.3% (6,900 eligible household units 6,438 responding)	none
1990	22,317 (18,000 national and 4,300 add-ons)	- list-assisted sample of telephone numbers formed a Random Digit Dialing (RDD) sample - sample was stratified by 34 geographic units	telephone interviews	one	Research Triangle Institute, Research Triangle Park, North Carolina	from memory	all trips of 75 miles or more with a return home during the 14 days preceding and including travel day	- first time that the survey conducted exclusively by phone - first unclustered sample design - data collected on most recent traffic accident, if within the past 5 years - first time for add-ons	73.1% (30,529 eligible and presumed eligible household units, 22,317 completing)	New York State Connecticut Indianapolis MPO

Exhibit 1-1. Changes Over Time in the NPTS/NHTS Data Series (continued)

Sample Year	Sample Size (households)	Sample Selection	Interview Method(s)	Number of Contacts	Contractor	Travel Day Data (memory/diary)	Travel Period Definition	Unique Attributes	Response Rate	Add-Ons
1995 NPTS	42,033 (21,000 national and 21,033 add-ons)	- list-assisted sample of telephone numbers formed a Random Digit Dialing (RDD) sample - sample was stratified by 70 geographic units	telephone interviews	two – one interview at the household level, one for each person in the household	Research Triangle Institute, Research Triangle Park, North Carolina	travel diary used	all trips of 75 miles or more with a return home during the 14 days preceding and including the travel day	- first time for a 2-stage survey using a travel diary - trip rates increased considerably because of the travel diary - completed household definition changed to 50% or more of household adults - household rostering of trips (ability to confirm trips previously reported by another household member) - first time cash incentives were used - first time odometer readings were collected	37.2% (112,960 eligible and presumed eligible residential telephone numbers, 42,033 household completing)	New York State Commonwealth of Massachusetts Oklahoma City, OK Tulsa, OK
1995 ATS	80,000	PSU's – outgoing panels of Census' Current Population Survey	telephone and personal visit	four-panel survey with 4 waves occurring 3 months apart	Bureau of Census	travel diary used	all trips of 100 miles or more during a 1 year period	- panel design of 4 wave interviews over a 1 year data collection period - trips of 100 miles or more, excluding commute trips	85% (68,000 households)	None
2001	69,817 useable households (26,038 national and 43,779 add-ons)	list-assisted sample of telephone numbers formed a Random Digit Dialing (RDD) sample	telephone interviews	two – one interview at the household level, one for each person in the household	Westat Rockville, MD (completed 54,937 interviews in the National sample and 2 add-ons); Morpac, Farmington Hills, MI (completed 14,880 interviews in 7 add-ons)	travel diary used	all trips of 50 miles or more with a return home during the 28 days preceding and including travel day	- first time the long trip survey (American Travel Survey) was combined with the daily trip survey (NPTS) - threshold for long trips was lowered to 50 miles to collect more trips in the previously ignored 50-75 mile range - if no long trips taken during travel period, most recent trip of 50 miles or more was collected - walking trips increased considerably because of multiple prompts in the questionnaire - cash incentives used in both the pre-interview letter and with the travel diary mailing - multiple data collection methods for odometer readings	28.6% (217,063 eligible and presumed eligible residential telephone numbers in full sample, 69,817 households completing)	Baltimore, MPO Des Moines, MPO Hawaii Kentucky (4 counties) Lancaster PA, MPO New York State Oahu (Honolulu MPO) Texas Wisconsin

The 1969 questionnaire was very short and to the point, while the 1977 questionnaire was long and detailed. Much of the detail added in 1977 was information on long trips (travel period trips). The focus on long trips in 1977 was further reinforced by the fact that a part of the NPTS sample was also interviewed for the National Travel Survey (NTS.) The NTS was a survey of long-distance trips (100+ miles) taken over the course of a full year. Note that 1977 marked the last national long-distance trip survey until 1995, when BTS (the Bureau of Transportation Statistics) resurrected this data series as the American Travel Survey.

The other major difference between the 1969 and 1977 surveys was that the focus on *auto* travel in 1969 was broadened to *vehicle* travel by 1977, reflecting the greater mix of vehicle types in the household-based fleet.

1983 – Like the 1969 and 1977, the 1983 survey was conducted as a face-to-face interview by Census Bureau field staff, using a retired PSU-based sample from the Current Population Survey. However, either because of the smaller sample size of 6,500 households or the economic conditions during the survey period, the 1983 data is acknowledged as an anomaly in the NPTS series, with trip and travel data believed to be too low. Another issue inherent to the 1983 dataset is that, given the low sample size, each Census field interviewer only conducted 2-3 NPTS interviews a month. It seemed that this was too low a threshold to maintain proficiency with a complex questionnaire like NPTS.

All three of the Census-administered surveys had used a four-day recall window beyond travel day. That is, the person-level interview must be completed within 4 days after travel day for the interview to be included.

1990 – The 1990 NPTS represented a switch to a private survey research firm, Research Triangle Institute, and to a telephone sample. The interviews were conducted using CATI (Computer-Assisted Telephone Interviewing) which allows for some on-line editing as the data is collected. A non-clustered random-digit dialing sample was used, which could better represent travel throughout the country. (Clustered samples are problematic for household travel surveys because the nature of some mode choices is highly dependent on very small geographic areas. For example, people who live within a half-mile of public transit will use it considerably more than

people who live 2 miles away from transit. Thus, the specific location of the clusters can determine the types of travel collected.)

Because it is more difficult to reach individual respondents by telephone, the recall window was expanded to 6 days beyond travel day.

While switching to a telephone survey resolved the problems with sample clustering and sample size, the 1990 NPTS trip rates (expressed as daily person trips per household) were still well-below those obtained by Metropolitan Planning Organizations in their household travel surveys. This had been a problem throughout the data series, and it would be solved in the 1995 survey.

1995 – A major change in the 1995 survey was the use of a travel diary for collecting daily trips. While the travel diary corrected the previously-described problem of trip rates, it necessitated a switch to a two-stage data collection.

The two-stage data collection, combined with the increase in survey burden and the increase in telemarketing over time, resulted in a much lower response rate than previously obtained in the NPTS.

Another significant change in the 1995 survey was changing the standard for a household to be included in the dataset. The previous requirement was that one or more household members had to complete the person interview for the household to be considered complete. In 1995, this was changed to 50% or more of the household adults (18+) had to be interviewed for the household to be included in the dataset.

2001 NHTS – The 2001 survey represented a combined survey of the NPTS and the ATS (American Travel Survey). The ATS, which had been conducted in 1995 by BTS, was a survey of trips of 100 miles or more taken over the course of a calendar year. There were problems in trying to use the 1995 NPTS and the 1995 ATS together to form a picture of total household travel by the American public. The combined survey approach for the 2001 NHTS was designed to give one data source for the full continuum of person travel.

In addition to a combined survey, the threshold for longer trips was lowered to 50 miles or more, to obtain a better sample of those often overlooked 50-100 mile trips.

For the first time in the NPTS series, travel was collected for household members 0-4 years old. All previous surveys had collected travel only from household members age 5 and older, on the dated assumption that those 0-4 only made trips with other household members. However, this ignored trips of this young group made with day care providers, as part of a preschool activity, or just with non-household members.

Great care was taken in the 2001 NHTS to resolve some of the response rate issues that surfaced in the 1995 survey. Westat, the survey contractor, initiated a number of successful actions to stop the decline in response rates.

More detail on each of the surveys in the NPTS/NHTS series is contained in Appendix O.

In addition to changes in the survey design and administration, a host of real world factors affected the 2001 NHTS, as described in the following section.

1-D.2. FACTORS AFFECTING COMPARABILITY TO PREVIOUS SURVEYS

Certain factors, such as the state of the economy and the price of oil are known to have significant effects on how, when, and the amount that people travel. Variations in these factors are expected and are often accounted for in travel trend analysis. However, during the 2001 NHTS data collection period, which was from March 2001 through May 2002, several extraordinary events occurred that undoubtedly affected travel in the United States. The first occurred on September 11, 2001, when terrorists attacked the World Trade Center Towers in New York and the Pentagon near Washington, D.C. using four commandeered commercial aircraft. The attacks, and the intense security measures imposed on commercial air travel and major transportation facilities of all types that followed, severely disrupted travel in the United States for months, changing the amount and modes of travel during that period. The second series of events occurred during the period from mid-September through mid-November 2001, when letters containing anthrax were sent to various recipients in Florida, New

York, and the District of Columbia. This resulted in a number of deaths and widespread concern regarding public health and the safety of U.S. mail, and the public's suspicion and fear of receiving unanticipated mail packages was greatly heightened. Although the impact of this on travel is yet to be determined, it may have affected NHTS response rates, since there was a mail component of the survey.

1-E. TYPICAL NHTS HOUSEHOLD

To illustrate key NHTS concepts, an example may be helpful. We introduce at this point a hypothetical sample household consisting of the following four persons:

Typical NHTS Household:

Amy and Keith live in a metropolitan area with their two children Lucy and Ben. When Keith picked up their mail in early April 2001, he noticed an envelope from the US Department of Transportation. On opening the envelope, he found that it contained a letter from Norman Y. Mineta, the Secretary of Transportation, a five-dollar cash incentive, and a brochure describing the NHTS. The letter informed Keith that their home telephone number had been selected in the sample for the National Household Travel Survey, and that they would be receiving a telephone call from an interviewer. Several days later, the household was contacted by telephone by an NHTS interviewer and participated in the survey.

We will refer back to this typical NHTS household from time to time in later sections of this User's Guide, to illustrate aspects of the survey procedures and methodology.