1990 NPTS

NATIONWIDE PERSONAL TRANSPORTATION SURVEY

TRAVEL MODE SPECIAL REPORTS

1990 NPTS Publications Series:

User's Guide for the Public Use Tape
(for tape or diskette users)

Summary of Travel Trends

Travel Behavior Issues in the 90's

1990 NPTS Databook

NPTS Urban Travel Patterns

NPTS Special Subject Reports

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U.S. Department of Transportation
Federal Highway Administration

1990 NPTS Report Series

Travel Mode Special Reports

Based on Data from the
1990 Nationwide Personal Transportation Survey (NPTS)

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Foreword

This series of papers, using data from the Nationwide Personal Transportation Survey (NPTS), has forged new bridges between policy makers, planners, and the academic community. Too often, in the transportation field, we forget that people travel to accomplish activities important to their daily life—to travel to and from work, to take care of their family and themselves, and to enjoy recreational and social activities. NPTS has a specific focus on this personal travel, and allows researchers to examine a multitude of characteristics of persons, households, and vehicles relative to their daily travel.

These papers give us new insights into how people travel today, how this differs from past behavior, and understanding the complexity and variety of travel needs. We need better understanding of how our policy decisions may impact different groups and how our planning processes need to account for these variations.

In 1995, the next NPTS will be collected, adding to the data series started in 1969. This special series of papers has also contributed to improving the design and implementation of the NPTS.

Gloria J. Jeff

Gloria J. Jeff
Associate Administrator for Policy
Federal Highway Administration

Introduction

The Nature of These Documents

This document is one of three volumes that have been produced as a set, containing topical subject papers from the Nationwide Personal Transportation Survey, NPTS. These volumes represent something of a departure from standard approaches to reporting the NPTS. Traditionally, the survey results have been reported in large volumes with an extensive series of tables, organized around important sections of the survey, or main categories of data, such as Vehicle-miles of travel, or work travel. While such volumes continue to be produced for the 1990 NPTS, they are being supplemented by a different approach as exemplified by these documents.

This new approach examines important emerging travel behavior trends, seeking to understand better key public policy issues on which the survey data can shed light. This approach is an outgrowth of a special study of the NPTS, entitled *Travel Behavior Issues in the 90's*, which provided an early look at the insights the NPTS could provide regarding significant policy-related topics. As a product of that study a series of additional topics were identified for further examination. Individual researchers were selected to intensively examine each subject and to prepare a paper presenting their findings. These papers have been compiled in the three volumes.

Value of This Approach

The goal of this approach is to advance understanding beyond that possible by traditional means. While the large volumes of summary tabulations produced from the survey are of great value, particularly in getting fundamental facts about travel on the record, they represent only one facet of the immense capabilities provided by the NPTS results. These supplemental, interpretive products support the role of the NPTS as an early warning system for emerging travel behavior trends, and as a mechanism for informing public policy officials.

The kind of presentation approach developed for these subjects recognizes the intended audience - primarily public officials, but also researchers, analysts and planners, as well as interested citizens. The extensive use of tables and graphics to make trends and patterns clearer is one attribute of the approach. But the fundamental characteristic that permeates these volumes is the synthesis of large masses of data from the survey into those that are central to understanding what demographic forces are affecting travel behavior.

Why These Subjects?

The subjects selected are something of a "hit parade" of major topics of interest coming from the NPTS. Topics have been selected that:

- are of substantial public interest,
- have bearing on current policy concerns,
- fill-in important questions about the direction and weight of current trends, and
- are sufficiently bounded so that a small individual study can make an incisive contribution to our understanding of travel phenomena.

As the purpose of this undertaking is to mine the rich resources of data from NPTS; it is the 1990 NPTS data set and its predecessor data sets from 1983, 1977, and 1969 that are the predominant, almost exclusive source of data for these studies. Where appropriate, researchers have used other data sets to extend or corrorborate the data.

Selected Studies

The twelve studies have been clustered into three groups based on their general subject matter. These are:

Demographic Special Reports

Chapter 1. An Assessment of the Potential Saturation in Men's Travel, Joel R. Rey, Steven E. Polzin, Ph.D., and Stacey G. Bricka

Chapter 2. Travel by Women, Sandra Rosenbloom, Ph.D.

Chapter 3. Travel by the Elderly, Sandra Rosenbloom, Ph.D.

Chapter 4. Multiworker Household Travel Demand, Siim Sööt, Ph.D., and Ashish Sen, Ph.D.

Chapter 5. Household Structure and Travel Behavior, Joan Al-Kazily, Ph.D., Carol Barnes, Ph.D., and Norman Coontz

Travel Mode Special Reports

Chapter 1. Travel by Households Without Vehicles, Charles Lave, Ph.D., and Richard Crepeau, Ph.D. Cand.

Chapter 2. Recent Nationwide Declines in Carpooling, Erik Ferguson, Ph.D.

Chapter 3. Non-Motorized Transportation, Debbie A. Niemeier, Ph.D. Cand., and G. Scott Rutherford, Ph.D.

Special Reports on Trip and Vehicle Attributes

Chapter 1. Understanding Trip Chaining, James Strathman, Ph.D., and Kenneth Dueker, Ph.D.

Chapter 2. Geographic Factors Explaining Work Trip Length Changes, Peter Gordon, Ph.D., and Harry Richardson, Ph.D.

Chapter 3. The Demography of the U.S. Vehicle Fleet, Alan Pisarski

Chapter 4. Time-of-Day Characteristics of Travel, Ryuichi Kitamura, Ph.D.

There are many other NPTS products already available or underway that go well beyond these subject studies. They are listed on the inside cover of this document.

Broad Findings

It is not feasible to summarize the individual findings of these twelve studies in a brief fashion. Twelve studies cover a broad range of subjects; all address different facets of travel characteristics or travel behavior. However, there are major themes that emerge from the materials. These themes were developed in a two day conference held in Arlington, Va. on April 20 and 21, 1994, in which the researchers presented the findings of their work and invited panelists and other conference participants to discuss the implications of the findings. The themes arose as part of the presentations of the researchers and from the separate workshop discussions that followed.

One of the themes, which has to be expressed with some care, is that researchers have discovered, or re-discovered, how complex is travel behavior and its demographic determinants. It may sound overly simplistic, or even selfserving, to state that travel behavior is increasingly complex but it does appear to be the case. There are several interrelated factors contributing to this trend, but the dominant one is the changing role of women.

This phenomenon is expressed, of course, in the paper addressing the travel characteristics of women, but it also permeates the content of the papers on multi-worker households, household structure, and the topic of trip chaining. The topic of suburbanization and work trip lengths is also affected.

Perhaps the major theme that emerges from the papers is that of issues of equity - equity for women, low income groups, racial and ethnic groups, and the aged. Almost all of the papers make a contribution to this topic, expanding and revealing some of the elements of the key issues surrounding the subject. Even the topic of the aging of the vehicle fleet contains elements of equity concern.

The final major theme links to topics of relevance to environmental concerns. One of these, of course, is the study of the aging of the vehicle fleet. But this, by far, is not the only material of great relevance. Other pertinent papers include the studies of trip time patterns, multi-worker households, walking patterns, geographic factors in trip length, the potential saturation of male travel, and perhaps most significantly, trip chaining characteristics.

There are other themes as well, many of them sub-themes derivative of the major themes. For the most part, the subthemes relate to more technical and organizational aspects of current transportation planning processes. There are three important elements among these technical themes.

- The federal regulatory process, at DOT and other agencies needs to take these patterns and trends into account.
- The state and metropolitan planning processes need to better understand these behavioral patterns and their implications for local travel needs.
- The relationships identified in these studies need to be incorporated better in the current modeling and forecasting systems in use at the state and metropolitan levels.

A final theme that arose again and again concerned the need for better mechanisms to inform the policy process of the character of travel behavior and its changing implications for public policy.

The reader will want to be alert to these themes and to the many others that permeate these reports which the reader may discover.

Alan E. Pisarski

Authors' Biographies

Charles Lave, Ph.D., is Professor of Economics at the University of California, Irvine. He is the only researcher who has processed NPTS data from its inception in 1969. He has received the Transportation Research Board's Pyke Johnson award. He has been a consultant on Travel Behavior to several Federal and state agencies including the U.S. Department of Energy and the Environmental Protection Agency.

Erik Ferguson, Ph.D., of the School of Architecture, Georgia Institute of Technology, has conducted extensive research on carpool formation based on 1977 and 1983 NPTS and other databases. His work on the influence of household composition on journey to work, including average vehicle occupancy, was presented at TRB in 1990. Dr. Ferguson is the only published researcher who has conducted trend analysis of carpool behavior based on NPTS data.

G. Scott Rutherford, Ph.D., is Associate Professor, in the Department of Civil Engineering at the University of Washington. He was the director of the Washington State Transportation Center (TRAC) from 1983 to 1991. Dr. Rutherford, together with **Ms. Debbie Niemeier,** are now the national leaders in research on non-motorized transport, with regard to travel demand and travel forecasting. They are currently developing a bicycle demand model to forecast ridership on bicycle facilities. Their innovative, diary-based study of household travel in neighborhoods with high potential for non-motorized trip making seeks to develop trip reduction rates based on land use mix.

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