

Personal Travel in the United States 1983-1984

VOLUME I



1983 Nationwide Personal Transportation Survey
August 1986

Part 1 of 3 of electronic PDF file

Chapters 1-5: Contains Preface, highlights and introduction, data considerations, drivers and vehicles, and vehicle trips and travel.

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PERSONAL TRAVEL IN THE U.S.

Volume I

**A REPORT ON
FINDINGS FROM THE**

**1983 - 1984
NATIONWIDE PERSONAL
TRANSPORTATION STUDY**

August, 1986

**Office of the Secretary
Federal Highway Administration
National Highway Traffic Safety Administration
Urban Mass Transportation Administration**

PREFACE

The Nationwide Personal Transportation Study (NPTS) is an investigation of the characteristics and personal travel patterns of the U.S. population. The NPTS derives its information from a nationwide home interview survey of households. The NPTS is a unique source of information on personal travel, both as a reference on key travel measures such as trip rates and vehicle occupancy levels, as well as being a source for linking the characteristics of households with their travel by all modes of transportation.

This report presents summary findings from the 1983 NPTS Survey conducted between February 1983 and January 1984. The 1983 survey obtained data from a national sample of 6,438 households. The survey sample was selected and the results presented in such a manner as to be representative of the nation as a whole. Previous NPTS surveys were conducted in 1977 and 1969. Comparing results from these three surveys provides a good picture of how the country's population and travel habits have changed over time.

This report presents principal findings from the 1983 survey, and offers a comparison of the same measures with the 1977 and 1969 surveys where the data are comparable. Topics covered by the report include drivers and their vehicles, household and person travel patterns, vehicle ownership and usage, journey to work, vehicle occupancy, long distance travel, and use of vehicle safety devices. Whereas the previous NPTS surveys were also accompanied by summary reports, the 1983 effort is different in two respects: a consolidation of the findings into a single report instead of individual subject reports, and a more extensive effort in comparing the results of the current survey with the previous surveys.

The survey is sponsored by four agencies within the U.S. Department of Transportation--the Federal Highway Administration, the Office of the Secretary of Transportation, the National Highway Traffic Safety Administration, and the Urban Mass Transportation Administration. The U.S. Census Bureau also had a significant role in the study. Working under an interagency agreement with the Department of Transportation, Census designed the survey and the sample, conducted the survey, and developed the basic data files. COMSIS Corporation, under contract to the Federal Highway Administration, had the responsibility of processing and analyzing the data and prepared the reports and the users' guide for the survey data tapes.

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1

HIGHLIGHTS

Significant changes occurred during the years 1969, 1977, and 1983. These demographic changes have had a substantial impact on the travel characteristics in the U.S. Table 1-1 displays a summary of key statistics and the amount of change.

TABLE 1-1
SUMMARY STATISTICS FOR THE
1969, 1977, AND 1983 NPTS SURVEYS

| | 1969 | 1977 | 1983 | Percent Change | | |
|---|-----------|-----------|-----------|----------------|---------------|---------------|
| | | | | 1969- 1977 | 1977- 1983 | 1969- 1983 |
| Households | | | | | | |
| All | 62,504 | 75,412 | 85,371 | 21 | 13 | 37 |
| 1 Person | 10,980 | 16,214 | 19,354 | 48 | 19 | 76 |
| 2 Person | 18,448 | 22,925 | 27,169 | 24 | 19 | 47 |
| 3 Person | 10,746 | 13,046 | 14,756 | 21 | 13 | 37 |
| 4+ Person | 22,330 | 23,227 | 24,092 | 4 | 4 | 8 |
| Persons | | | | | | |
| All | 197,213 | 213,141 | 229,453 | 8 | 8 | 16 |
| Under 16 | 60,100 | 54,958 | 53,682 | -9 | -2 | -11 |
| 16-19 | 14,598 | 16,552 | 15,268 | 13 | -8 | 5 |
| 20-34 | 40,060 | 52,252 | 60,788 | 30 | 16 | 52 |
| 35-64 | 62,982 | 66,988 | 75,353 | 6 | 12 | 20 |
| 65+ | 19,473 | 22,391 | 24,362 | 15 | 9 | 25 |
| Licensed Drivers | | | | | | |
| All | 102,986 | 127,552 | 147,015 | 24 | 15 | 43 |
| Male | 57,981 | 66,199 | 75,639 | 14 | 14 | 30 |
| Female | 45,005 | 61,353 | 71,376 | 36 | 16 | 59 |
| Workers | | | | | | |
| All | 75,758 | 93,019 | 103,244 | 23 | 11 | 36 |
| Male | 48,487 | 55,625 | 58,849 | 15 | 6 | 21 |
| Female | 27,271 | 37,394 | 44,395 | 37 | 19 | 63 |
| Vehicles ^b | 72,500 | 120,098 | 143,714 | 66 | 20 | 98 |
| Vehicle Trips ^{a,b} | 87,284 | 108,826 | 126,874 | 25 | 17 | 45 |
| Vehicle Miles of Travel ^{a,b} | 775,940 | 907,603 | 1,002,139 | 17 | 10 | 29 |
| Person Trips ^{a,c} | 145,146 | 211,778 | 224,385 | 46 | 6 | 55 |
| Person Miles of Travel ^{a,c} | 1,404,137 | 1,879,215 | 1,946,662 | 34 | 4 | 39 |

Note: All numbers in thousands except where noted.

^aIn millions.

^b1969 survey includes only automobiles, station wagons, and vanbuses/minibuses as household vehicles, and the data shown above include only trips and travel made in these vehicle types.

^c 1969 survey does not include walk and bicycle trips and trips made by persons under 5 years old.

Some of most important changes that occurred from 1969 to 1983 are graphically displayed in Figure 1-1. The total number of households increased 37 percent, but one person households increased a phenomenal 76 percent. Also depicted is the large growth in the number of female drivers and workers.

Americans owned more vehicles as time progressed, making more vehicles available to drivers and reducing the annual mileage driven on any given vehicle. In 1983 there was an average of one vehicle for each licensed driver (Figure 1-2).

FIGURE 1-1
CHANGES IN KEY SURVEY INDICATORS
(1969 TO 1983)

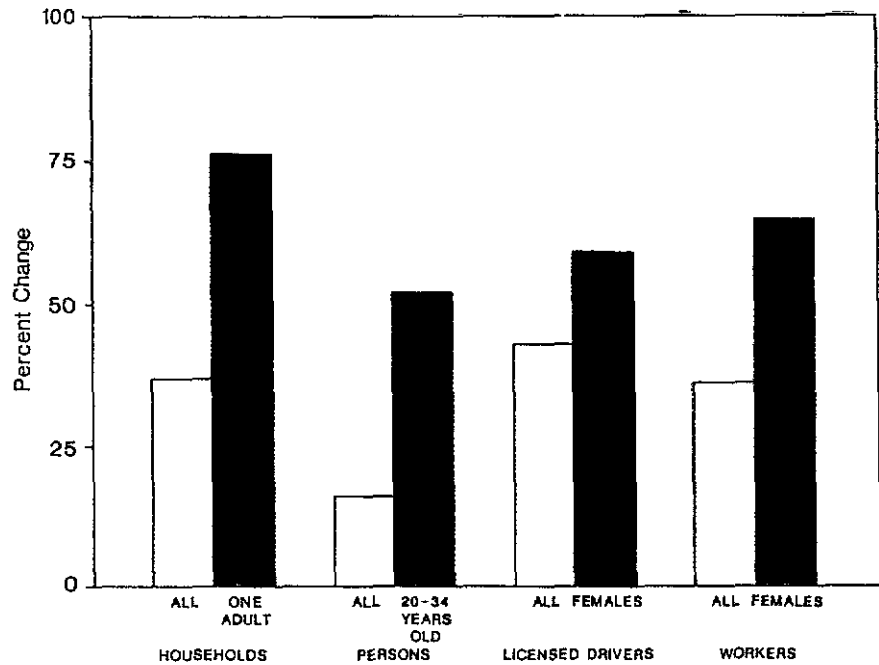
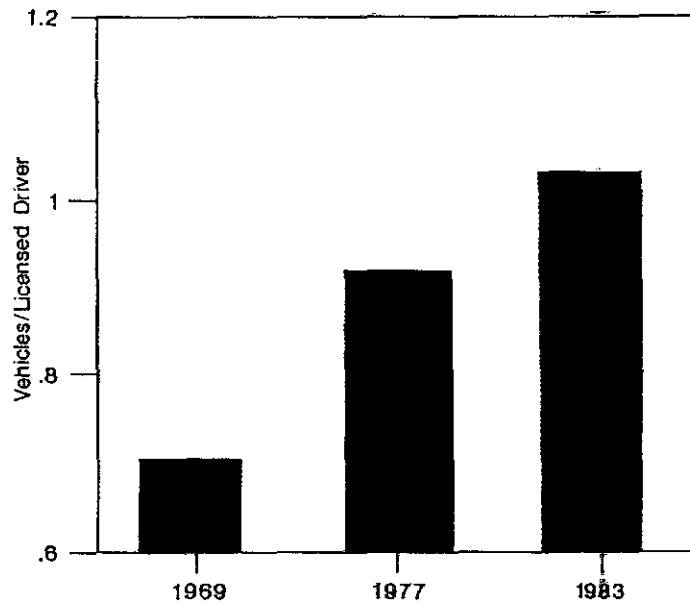


FIGURE 1-2
NUMBER OF VEHICLES PER LICENSED DRIVER
(1969 TO 1983)



Household size decreased over time, but number of vehicles per household increased (Figure 1-3), which provided the household more travel flexibility.

The majority of travel during the 14-year period was for home-to-work and social and recreational purposes, but the actual amount driven decreased from 1969 to 1983 for these purposes, while travel for shopping and other personal business increased significantly (Figure 1-4).

FIGURE 1-3
NUMBER OF PERSONS AND VEHICLES PER HOUSEHOLD
(1969 TO 1983)

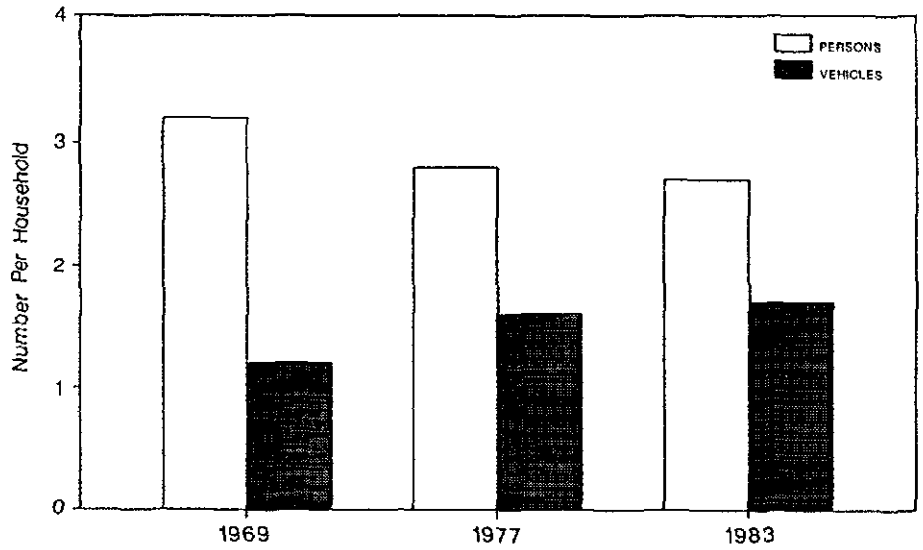
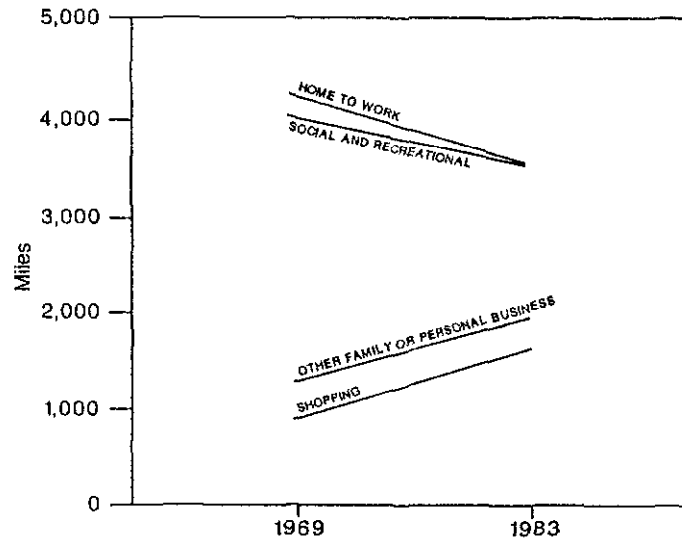


FIGURE 1-4
CHANGES IN AVERAGE ANNUAL VMT PER
HOUSEHOLD FOR SELECTED TRIP PURPOSES



The average trip length decreased from 8.9 miles in 1969 to 7.9 miles in 1983. A partial explanation is probably the increase in number of vehicles available to households, thereby not having to combine multiple trips into one, but making separate short trips.

As seen in Figure 1-5, occupancy declined across all trip purposes, partially due to the proliferation of vehicles in the U.S.

The use of light trucks increased for home-to-work purposes. This is evident from workers' choice of mode for trips to work (Figure 1-6).

FIGURE 1-5
AVERAGE VEHICLE OCCUPANCY FOR SELECTED TRIP PURPOSES
(1977 TO 1983)

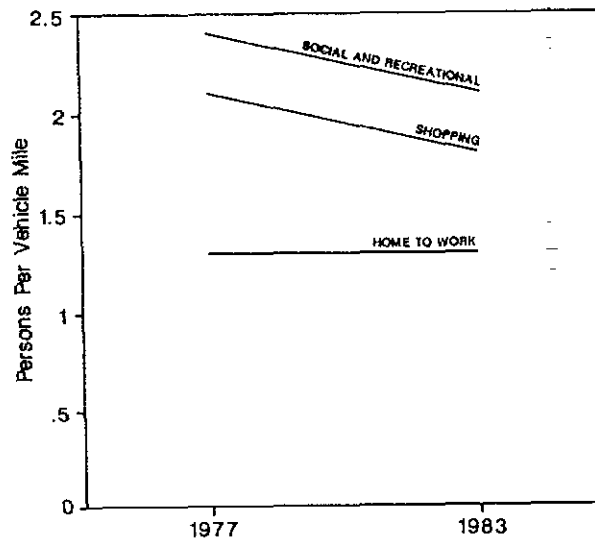
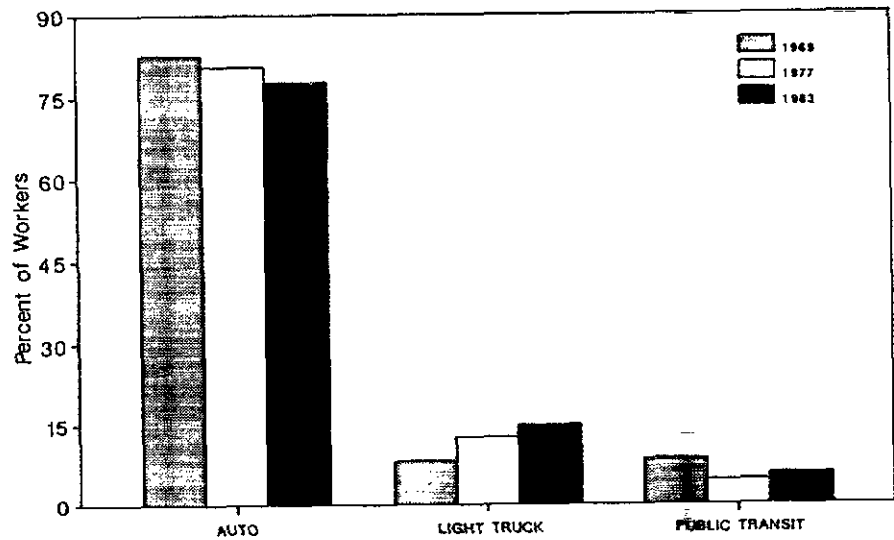


FIGURE 1-6
DISTRIBUTION OF WORKERS BY CHOICE OF COMMUTE MODE
(1969 TO 1983)



The vehicle fleet continued to age over the years (Figure 1-7). This could be attributed to the increasing cost of new vehicles. Figure 1-8 shows that usage of each vehicle decreased as the number of vehicles increased in the household. This suggests that the additional vehicles were not used to increase total travel per household, but rather to give different members of the household access to different destinations simultaneously.

FIGURE 1-7
AVERAGE VEHICLE AGE
(1969 TO 1983)

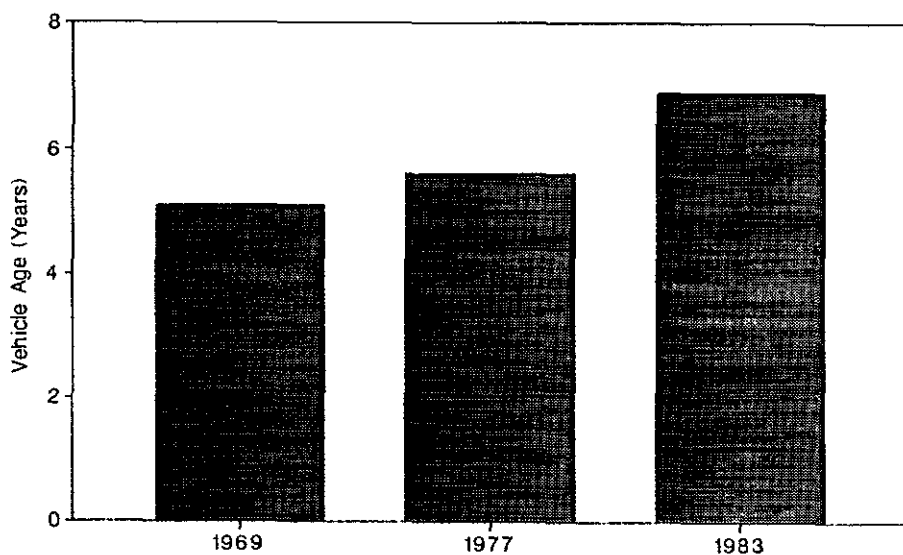
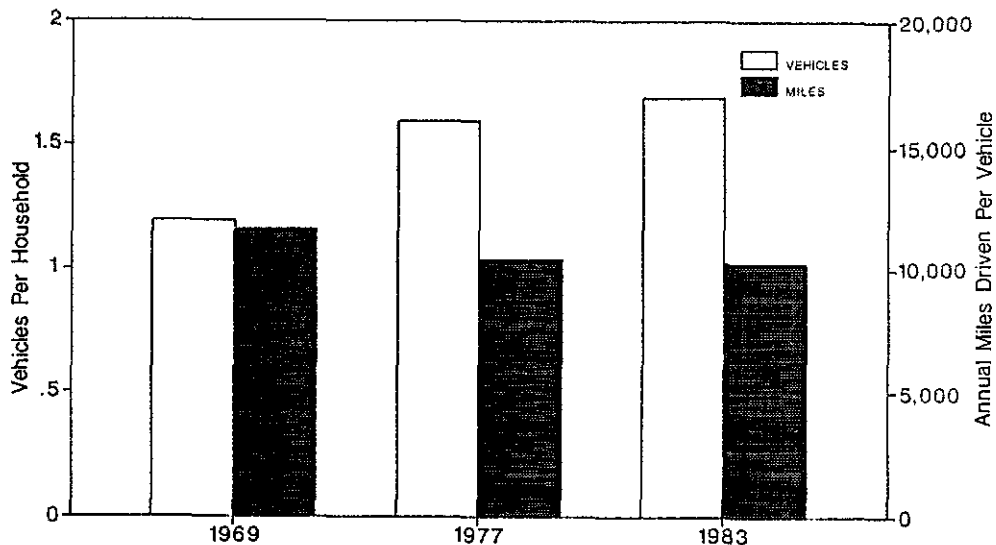
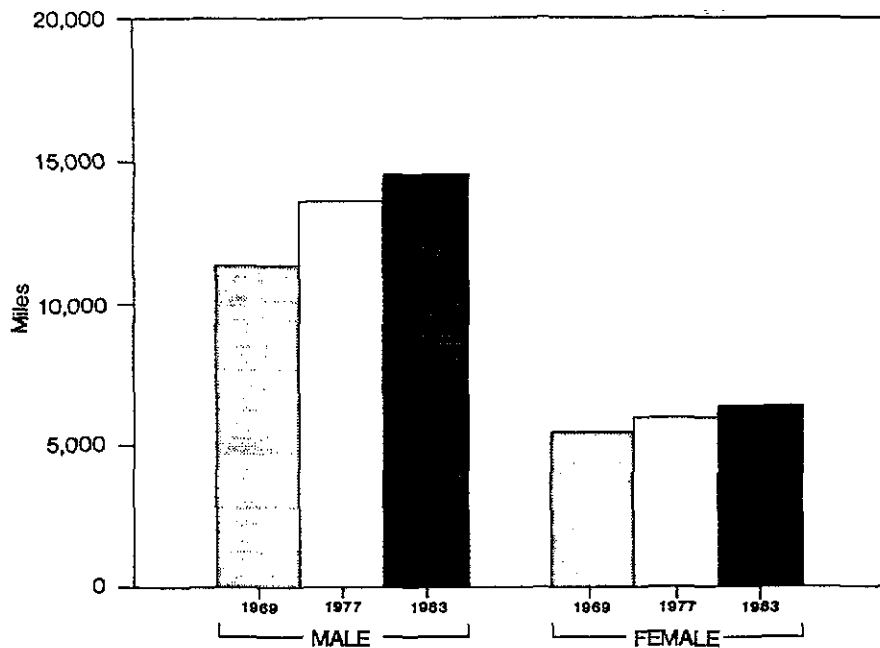


FIGURE 1-8
AVERAGE NUMBER OF VEHICLES PER HOUSEHOLD
AND ANNUAL MILES DRIVEN PER VEHICLE
(1969 TO 1983)



Whereas the average vehicle was driven less over time, the average licensed driver drove more. Both men and women increased their driving, with men still driving substantially more annually than women (Figure 1-9). However, with the increase in women drivers (Figure 1-1), womens' share of total miles driven increased from 27 percent in 1969 to 29 percent in 1983.

FIGURE 1-9
AVERAGE ESTIMATED ANNUAL MILES DRIVEN BY SEX
(1969 TO 1983)



People reported that they were more apt to use safety devices in 1983 under adverse driving conditions than they would under normal conditions (Figure 1-10).

Long trips of 75 miles or more (one-way) represented less than 1 percent of all trips made in private vehicles in 1983, but accounted for 16 percent of the vehicle miles traveled on roads in the U.S. (Figure 1-11).

FIGURE 1-10
PROPORTION OF VEHICLE OCCUPANTS WHO ALWAYS WEAR SEAT BELTS
BY ROAD CONDITION
(1983)

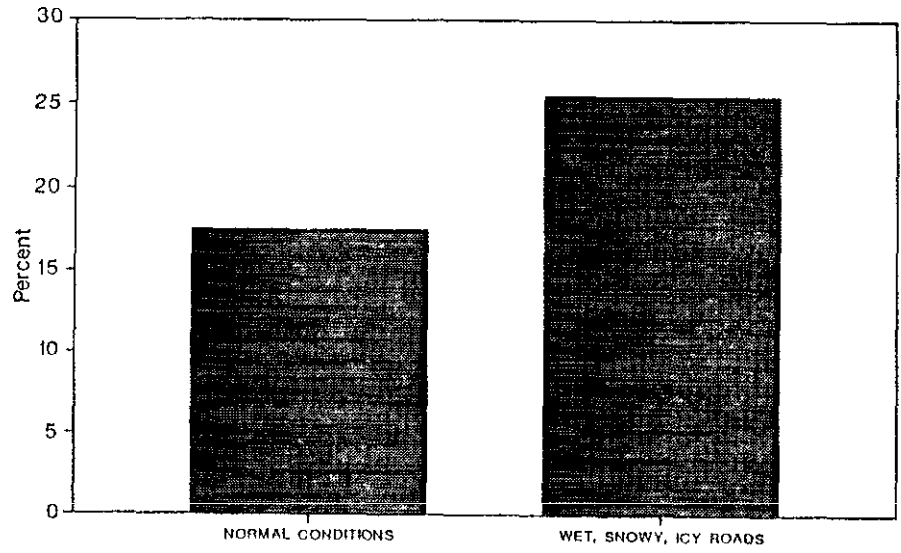
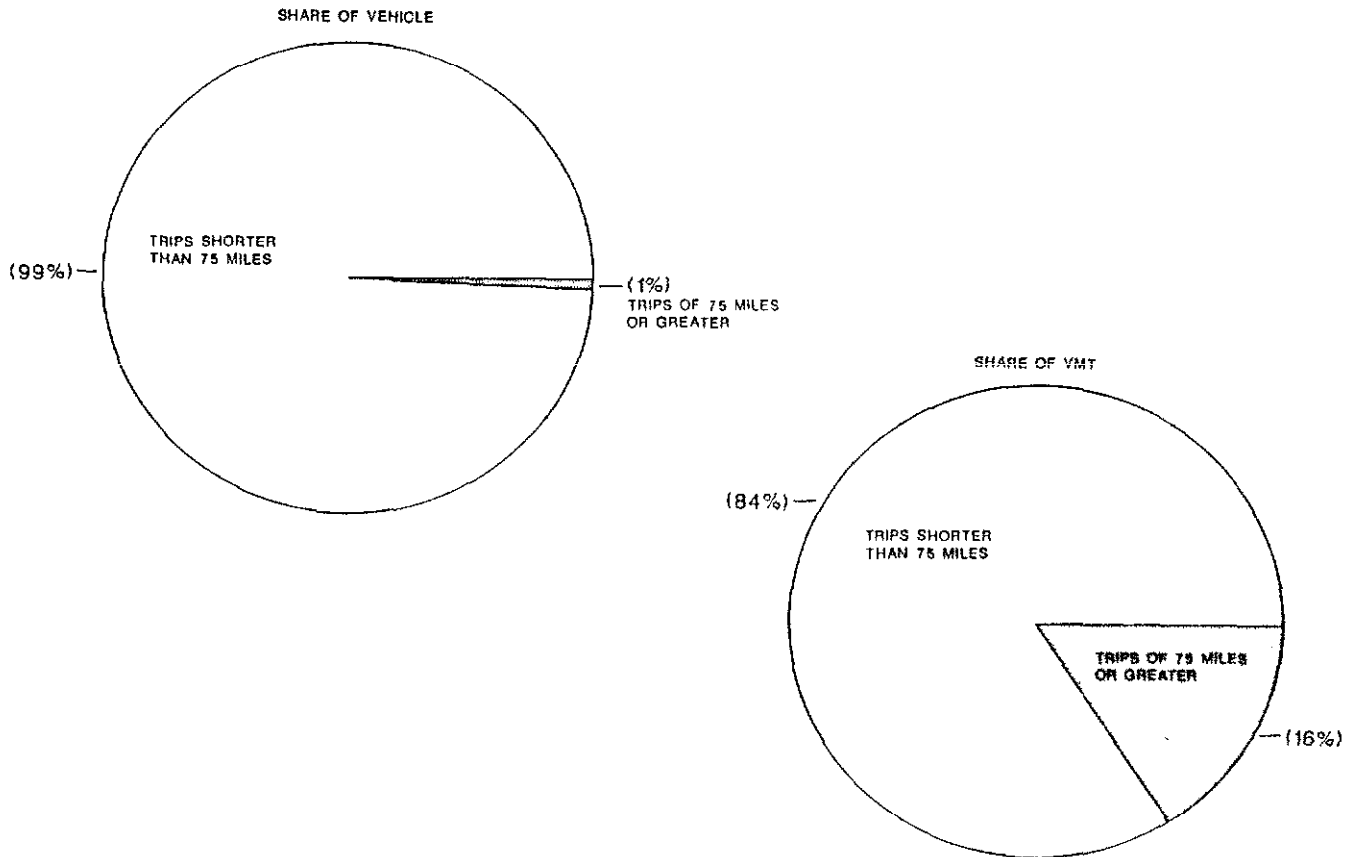


FIGURE 1-11
DISTRIBUTION OF SHORT AND LONG VEHICLE TRIPS AND VEHICLE MILES OF TRAVEL
(1983)



2

INTRODUCTION

PURPOSE OF REPORT

This report presents findings from the 1983 Nationwide Personal Transportation Study (NPTS). The data in this study were obtained from a national sample of 6,438 U.S. households surveyed between February 1983 and January 1984. The survey obtained extensive data on personal travel in the United States, including such topics as:

- o Licensed drivers;
- o Characteristics of households and their travel;
- o Vehicle occupancy;
- o Characteristics of individuals and their travel;
- o Characteristics, ownership and usage of vehicles;
- o Daily versus long-distance travel patterns;
- o Characteristics of workers and the journey to work; and
- o Use of vehicle safety devices.

Where possible, findings from the 1983 NPTS survey are compared with findings from the previous 1969 and 1977 surveys. Differences in scope and definitions between the current and previous surveys mean that various measures cannot be directly compared. Where comparisons are possible, the different survey periods illustrate important changes in the population and their travel patterns.

The NPTS findings--current and past--represent an important frame of reference for all who are concerned, either in a planning, research or policy context, with personal transportation behavior. The specific tables and relationships in this report have been selected based on an understanding of the most common needs of the typical user. Many users have a need to look at the data in a specialized way that could not be foreseen or accommodated during the writing of this report. There are alternatives available to the users with special needs. Users are encouraged to take full advantage of the wealth of information that has been obtained in this study.

Description of Data

The 1983 NPTS survey encompasses data collected from 6,438 households through home interviews. The data was collected by the U.S. Census Bureau. The 1983 NPTS survey questionnaire was divided into a general section on household information, and seven numbered sections dealing with specific demographic and travel characteristics.

Included in the household section is such information as type of home structure, tenure, land use, and demographic data for each household member. Section I contains information on each of the motor vehicles available for use by members of the household. Section II addresses information regarding the proximity and type of public transportation available to the household. Section III includes

questions on employment status and occupation during the week prior to the interview, including questions dealing with transportation to and from work. Section IV produces information about drivers in each household who are at least 16 years of age. Section V contains questions regarding long household trips (at least 75 miles in length from home to the farthest point on the trip with a return to home) taken during the 14-day period ending on the travel day. Section VI deals with specific detailed information on all trips taken by household members during a 24-hour period designated as a travel day. Included are questions on trip purpose, mode of transportation, trip duration and distance, and the number of people in the travel party. In cases where travel was made by private vehicle, additional data on the specific vehicle is requested. Section VII adds a new dimension to the questionnaire by providing information on availability and use of safety devices in household vehicles. The section is divided into two parts: Part A looks at seat belt usage for household members age 5 and above, while Part B concentrates on child safety seats or other safety devices for household members age 4 or younger.

A copy of the 1983 NPTS study questionnaire is contained in Appendix B of this report.

Sample Design

The 1983 NPTS was based on a national probability sample of approximately 7,900 households selected from each of the 50 states and the District of Columbia and representing the total civilian non-institutional population of the United States. However, 1,000 of these household units were found to be vacant, demolished, converted to nonresidential use, or otherwise ineligible for the survey. Of the 6,900 households eligible for interviewing, approximately 450 were not interviewed because the occupants were not home after repeated calls, refused to participate in the survey, or because they were unavailable for some other reason(s). This resulted in a net of 6,438 sample households.

The sample was obtained by first dividing the country into 1,930 primary sampling units (PSU's) consisting of counties, groups of counties, or independent cities. From these, 376 strata were formed, consisting of either a single PSU, generally containing the larger metropolitan areas, or combinations of PSU's possessing similar demographic characteristics. By choosing the 102 largest single PSU's and by statistically pairing and selecting the remainder, a sample of 239 PSU's was obtained. Housing units within each PSU were then chosen for the sample through the selection of a sample of census enumeration districts (EDs). The sample was updated based on building permits issued since the time the housing units had last been sampled and interviewed (for the Census Current Population Survey). Additional details regarding the NPTS sample design may be found in Volume II of this report.

Comparability of 1983 NPTS With 1969 and 1977 NPTS

Important trends related to changes in travel characteristics between 1969 and 1983 can be determined by comparing NPTS data for these three survey years (1969, 1977, and 1983). In order to properly do this, the changes in survey data items and procedures for the years must be evaluated to determine how best to present compatible data for comparison among the three survey years. The 1969 and 1977 NPTS surveys were also home interview surveys. The 1969 NPTS interviewed approximately 6,000 households. Half of these households were interviewed once, the other half were interviewed four times during the survey year. Thus, the 1969 survey yielded approximately 15,000 household interviews. In the 1977 and 1983 NPTS, households were interviewed once during the survey year. The 1977 survey consisted of 18,000 households and the 1983 of 6,400 households. Weighting factors were developed and applied to all three surveys to arrive at national estimates of all the characteristics presented.

Several key data items were collected differently in the surveys. In 1969, only information on the ownership, characteristics, and usage of automobiles and passenger vans was collected. The 1977 and 1983 NPTS were expanded to contain data on all vehicles available to the household including pickup trucks and other trucks, motorcycles, etc.

In 1977 and 1983, in order to eliminate statistical double counting, vehicle trips tabulated in the reports were restricted in definition to those on which a household member was the driver of the vehicle. This was not true in the 1969 survey, where no restrictions were placed on vehicle driver qualification for vehicle trips. Where possible, data tables have been included in this report which define 1977 and 1983 trips in terms of the 1969 trip criteria, providing comparability for the three surveys. In most instances, however, only 1977 and 1983 NPTS data have been presented.

The 1977 NPTS collected trips using 21 trip purposes in an attempt to obtain more information on the characteristics of the trip as well as the purpose. However, to allow for comparability of trips and their purposes, the 1977 data were reduced to the 11 purposes found in the 1969 and 1983 surveys.

Income categories were revised and non-family household income was collected for the first time in 1983. Where income data is presented in this report, 1977 and 1969 incomes have been inflated to the 1983 dollar level.

In the 1977 survey, certain trips were traced on maps to determine the distribution of travel in urban and rural areas. This feature was eliminated in 1983. As was true in the 1969 NPTS, 1983 travel was related to the place of residence of the trip maker.

Minor changes in the wording of public transportation, carpool, and parking questions occurred in the 1983 survey.

In presenting data for comparison, steps have been taken to minimize any effects that the above differences may generate. For more detailed infor-

mation on the procedures used to make data items comparable see Chapter 3--Data Considerations.

Organization of Report

Each of the topics mentioned earlier are presented in Chapters 4 through 10 of this report. This is slightly different from the earlier NPTS reports which were issued in a series of subject area reports for each survey year. The subject areas have remained the same but are assembled in one volume for 1983. The topics as they are found in this report are:

Volume I

- o Licensed Drivers and Vehicles, which presents data on licensed drivers and household vehicle ownership and utilization;
- o Vehicle Trips and Travel, which relates the characteristics of households to the trips they take in their vehicles;
- o Person Trips and Travel, which relates person demographics to travel by the individual;
- o Workers and Journey-to-Work, a presentation of data concerning workers and commuting characteristics;
- o Vehicle Occupancy, a compilation of occupancy data related to various demographic and trip characteristics;
- o Travel Period Trips and Travel, which presents data on long trips (75 miles or longer, one-way distance from home); and
- o Safety, a new NPTS topic, which represents data regarding the usage of seat belts and child safety seats.

Also included in this report are the following appendices:

- o Glossary, which contains definitions of terms used in the report;
- o 1983 NPTS Public Use Tape order form; and
- o 1983 NPTS Questionnaire.

Volume II

- o Weighting Procedures, which outlines the procedures used in the survey and expanding the survey sample to national estimates;
- o Estimates of Variances; and
- o Additional Tabulations, which contains additional tabulations and more detailed data than presented in the body of the report.

Products and References

In addition to this report, the following products are available in connection with the 1983 NPTS:

- o Summary of Travel Trends, 1983-84 Nationwide Personal Transportation Study, November 1985, containing trends on national demographics, household composition, vehicle ownership, household travel, journey to work, vehicle utilization, auto occupancy, mode split and drivers for the 1969, 1977 and 1983/84 NPTS.
- o Survey Data Tabulations, November 1985. A compilation of the most commonly requested data tabulations from the 1983 NPTS.
- o User's Guide for the Public Use Tapes, 1983-1984 Nationwide Personal Transportation Study, explains the 1983 NPTS data collection, coding and tabulation procedures, and contains the data file definitions and related documentation needed to use the tapes.
- o NPTS Public Use Tape(s) in SAS, TPL or EBCDIC format, in 1600 or 6250 bits per inch recording density. Instructions and form for obtaining this data are included in Appendix C of this report.

To obtain NPTS publications/tape, contact:

Federal Highway Administration
Travel Monitoring and Transportation Studies
Division, HPM-30
Washington, D.C. 20590
(202) 366-0160

3

DATA CONSIDERATIONS

This chapter deals with steps taken in compiling the NPTS data and the considerations that should be made when analyzing the data as it is presented in this report.

The three NPTS surveys conducted in 1969, 1977, and 1983 had different designs and implementations. These differences resulted in incompatibilities in the data among the survey years. Some of the differences were slight and with minor adjustments to the data, comparisons could be made with the other survey years. Some of the data differences could not be reconciled, and therefore trend analysis was not possible for these data.

For purposes of consistency and simplicity, certain assumptions were made and constraints imposed on the collection and enumeration of the NPTS data. These will be presented and their impact explained.

The discussions are grouped by the data items in question and center on its implications.

Vehicles

In the 1969 survey, vehicle refers to automobiles, station wagons, and passenger vans only. In the 1977 and 1983 surveys, the term vehicle also includes pickup trucks, other light trucks, utility vans, recreational vehicles, motorcycles, and mopeds. The data shown in this report reflect autos and vans in 1969 and the expanded vehicle definition in 1977 and 1983. This includes distributions of vehicles, households, and trips. Therefore care should be taken when comparing any data that is based on the number of vehicles.

Income

Income was collected in categories as opposed to actual values (for all survey years). These categories changed with the surveys and had to be combined in some cases for compatibility. Also, the value of money changed during this time frame due to inflation. To accurately present the data and be able to draw any conclusions, the income categories had to be adjusted to compensate for the inflation of money. Using the Consumer Price Index (CPI), the boundaries of the income categories were adjusted for 1969 and 1977 incomes. These new equivalent categories were matched up as closely as possible with the categories found in the 1983 survey. Of course, an exact match was not obtained. Following are the 1969 and 1977 NPTS income categories that correspond to 1983 dollar categories.

| <u>1969 Dollars</u> | <u>1977 Dollars</u> | <u>1983 Dollars</u> |
|---------------------|----------------------|----------------------|
| Under \$4,000 | Under \$6,000 | Under \$10,000 |
| \$4,000 to \$7,499 | \$6,000 to \$11,999 | \$10,000 to \$19,999 |
| \$7,500 to \$14,999 | \$12,000 to \$24,999 | \$20,000 to \$39,999 |
| \$15,000 or More | \$25,000 or More | \$40,000 or More |

Vehicle Trips

The vehicle trips reported for 1977 and 1983 in this report are limited to those in which a household member was a driver, either in whole or in part. This limitation was employed to eliminate statistical double counting, which would occur if the same trip was reported by two different households. In contrast, the 1969 data are based on all vehicle trips reported by the surveyed household, including those in which a non-household member was driving.

Place of Residence

In 1983, the place of residence relative to location in an SMSA or size of SMSA was suppressed for some respondents due to the privacy of information act. This was due to inclusion of other geographic data on the file, which created cells too small to pass the privacy requirements. This category is not presented in detail in the tabulations of this report, but where it affected a cumulative total a footnote was added to give the amount of "unknown" not categorized.

Purpose of Trip

The 1977 NPTS provided much more detail on purposes of collected trips than the 1969 and 1983 NPTS'. The 1977 survey had 21 different trip purposes, whereas the 1969 and 1983 surveys each only had 11. Some of the 1977 additional trip purposes could be incorporated into one of the 1969/1983 trip purpose categories without any additional recoding or reclassifying. Other 1977 trip purposes, such as change mode, pick up or leave off passengers could not easily be classified with a 1969/1983 trip purpose code. A procedure was developed for linking these trips to the next acceptable trip. This procedure produced the trip distributions by purpose found in the 1977 report series.

A drawback of this procedure was the remaining large amount of trips with an unknown purpose. For this report, the 1977 unknown trips were allocated to purposes of the trips occurring before and after those in question. This reduced the percentage of unknown trips from 9.5 percent to 1.5 percent. Therefore, the distributions of 1977 trips by purpose do not agree with those presented in the 1977 report series.

Estimates of Miles Driven per Household

Three types of annual estimates of miles driven per household are presented in this report: 1) estimated miles driven by each licensed driver in the household, 2) estimated miles driven for each vehicle in the household, and 3) summation and expansion of all travel made during the travel day. The first two estimates are sums of individual driver or vehicle estimates within the household, which can cause a problem when one or more of the individual estimates are unknown. In such cases, the total was considered unknown. For example, the average estimated miles driven in all vehicles by households with three vehicles is "unknown" if one of the households only has estimates for two of the three vehicles. Therefore, this household was not included in the tabulation for that particular

item. The third estimate is derived from adding all the miles driven in household vehicles during the travel day and expanding it to an annual estimate. The three estimates can be quite different, as illustrated below.

| | |
|--|--------|
| Estimated annual miles driven per household by drivers | 17,717 |
| Estimated annual miles driven per household for vehicles | 17,364 |
| Estimated annual miles driven per household sum of travel (all households) | 11,739 |
| Estimated annual miles driven per household sum of travel (vehicle owning households only) | 13,575 |

Workers

The data related to workers presented in this report include part-time workers. All tabulations for 1977 data were revised to include the part-time workers and therefore do not agree with those published in the 1977 report series.

Work Trips

There are two types of estimates for trips and travel to work: 1) usual work trip and 2) actual work trip. The first estimate is derived from the worker's response to how he usually went to work, as part of the questions in the employment and occupation section of the questionnaire. The second estimate comes from the travel day section of the questionnaire which contains the information from all trips taken on the travel day. This estimate would include all trips that had the purpose of home to work. It is expected that the estimated information on the usual work trip will vary somewhat from the actual work trip, and, in fact, it does.

Age of Vehicle

The ages of vehicles presented in this report are based on the model year of the vehicles. For the three survey years the model year age relationships are as follows:

| AGE | MODEL YEAR | | |
|------------------|--------------|--------------|----------------|
| | 1969 SURVEY | 1977 SURVEY | 1983 SURVEY |
| less than 1 year | 69,70 | 77,78 | 83,84 |
| 1 year | 68 | 76 | 82 |
| 2 years | 67 | 75 | 81 |
| 3 years | 66 | 74 | 80 |
| . | . | . | . |
| . | . | . | . |
| 10 years or more | 59 & earlier | 67 & earlier | 73 and earlier |

Occupancy

Occupancy is generally calculated on either a "trip" basis (occupants per vehicle trip) or a

"travel" basis (occupants per vehicle mile). Usually, rates computed on occupants per vehicle trip result in lower levels of average occupancy, since the number of occupants increases with trip length. Because rates computed on the travel basis have a more direct relationship to energy consumption and highway utilization, those rates have been emphasized for the presentation of this report.

Occupants per Vehicle Mile =

$$\frac{\text{SUM [number of occupants} \times \text{number of miles]}}{\text{SUM [number of miles]}}$$

Safety Devices

The information provided in this report on the use of safety devices is based on the response of persons interviewed. It is not a survey of actual usage of such devices. The usage of safety devices depicted in this report is somewhat higher than other published findings, probably due to an over-estimation of use on the part of the persons interviewed.

Home-to-Work Trip Lengths

The NPTS Survey Questionnaire contains two sections which can be used as data sources for home-to-work trips and travel. Section III of the questionnaire contains a series of questions related to the characteristics of the usual home-to-work trip, including trip distance. Section VI of the questionnaire collects specific information on all trips taken by household members on a designated travel day and includes the actual home-to-work trip length. It is expected that there may be some differences between the worker's usual work trip distance as reported in Section III (Occupation and Travel to Work) and the actual home-to-work trip distance as reported in Section VI (Travel Day).

In analyzing the data from the two sources, an interesting phenomenon was discovered. The home-to-work usual trip length derived from Section III is 9.9 miles, while data obtained from Section VI, Travel Day, showed a home-to-work trip length of 8.5 miles in 1983. The differences between the usual and actual work trip lengths resulted in conflicting trends over time. The home-to-work usual trip length derived from Section III increased from 9.7 miles in 1969 to 9.9 miles in 1983, with a slight decrease in 1977 to 9.3 miles. Data obtained from Section VI showed actual home-to-work trip lengths decreasing from 9.4 miles in 1969 to 9.1 miles in 1977 and to 8.5 miles in 1983. This issue has been analyzed in depth; however, no ready explanation was found to account for the 1.4 mile difference between the usual and actual home-to-work trip lengths in 1983, as well as the differences in trends of the two data sources from 1969 to 1983. The following may assist the reader in understanding these differences:

1. In 1983, there were three different universes of respondents reporting home-to-work trip length data. Of the 103 million workers, more than half, or approximately 52 percent (54 million) reported both actual and usual home-

to-work trip length data. An additional 41 percent (42 million) reported usual only and some 6.9 percent (7 million) reported actual only. To put it in another way, 95 million workers reported the usual work trip length while only 60 million reported the actual trip distance. This alone could explain the difference in the two trip lengths.

2. Estimates of usual trip lengths are almost always longer than the estimates of actual trip lengths. In fact, for the 54 million workers who reported both usual and actual, approximately 15-20 percent reported a different trip length for each. Most often, the usual work trip was longer than the actual.
3. A proxy member of the household could report for an absent worker in Section III (usual). This could result in an over/under estimation of the usual trip length. However, all respondents had to report for themselves the actual work trip length in Section VI, Travel Day. A proxy was not allowed for travel day trip reporting.
4. There were some very long home-to-work trip lengths reported in Section III (usual), but not in Section VI (actual), which skewed the usual home-to-work trip length.
5. Large differences exist in the percent reporting the shorter trip lengths. Specifically, 42 percent of the usual home-to-work trips lengths are 5 miles and less, compared to 54 percent of the actual. This difference is due largely to those reporting trip lengths of 2 miles or less. Only 22 percent of usual responses were in trips of 2 miles or less, while 31 percent of actual were in this category.

In investigating this phenomenon, the only other source of national data that can be found is from the American Housing Survey (AHS), conducted by the Census for the Department of Housing and Urban Development. Data obtained from the national samples of AHS show usual work trip lengths increasing from 8.5 miles in 1975 to 10.0 miles in 1980. Data are not yet available from the 1985 AHS.

Chapters V and VI of this report contain data derived from the actual (travel day) trips. Chapter VII contains data from both the usual and actual work trips. The reader should keep in mind the differences in home-to-work trip length when using the data from these chapters.

4

DRIVERS AND VEHICLES

INTRODUCTION

This chapter presents information on the characteristics of licensed drivers and the vehicles they operate. It addresses the following questions:

- o the rates of driver licensing in the various demographic subgroups,
- o the estimated miles driven by licensed drivers by age and sex,
- o the number of annual miles driven by licensed drivers,
- o the characteristics of vehicles and ownership rates, and
- o the annual miles driven on these vehicles.

Whenever possible, equivalent data on these characteristics have been compiled from the 1969 and 1977 NPTS surveys and have been assembled alongside the 1983 data to illustrate important trends. The material in this chapter is comparable to the material presented in Reports 1, 2, and 5 in the 1977 NPTS report series and Reports 2, 6, and 11 in the 1969 series.

Many important demographic changes have taken place between 1969 and 1983, and in some cases even between 1977 and 1983. The population has continued to mature as the "baby boom" generation moves through the age distribution; household size has been declining, more women have joined the workforce, and incomes have increased. All of these factors affect an individual's need for and likelihood of acquiring a drivers license, and in owning and driving a motor vehicle. The changes that have occurred have mostly caused an increase in the demand for drivers licenses, vehicles, and travel.

This chapter investigates changes in rates of driver licensing by age, sex, employment status, household income, and residential location. It then examines the rates of vehicle travel by each of these demographic subgroups. Rates of travel are expressed in terms of annual miles driven by licensed drivers, as estimated by the individual.

(Continued)

The section on vehicles describes ownership rates relative to characteristics of the household such as household size, number of drivers, income, and location. Vehicles are described by type, age, whether purchased new or used, and the method of ownership. Each of these factors is looked at as it relates to the annual miles driven on each vehicle as shown by household estimates.

Mileages reported in this chapter reflect "annual estimates" made by the survey respondents. Other chapters will present mileages based on "actual trips" that respondents reported making on a specific day, expanded to annual totals.

SUMMARY OF NATIONAL ESTIMATES USED IN THIS CHAPTER

| | <u>1969</u> | <u>1977</u> | <u>1983</u> |
|---|-------------|-------------|-------------|
| Persons Age 16 and Older | 140,178 | 158,263 | 175,725 |
| Licensed Drivers | 102,986 | 127,552 | 147,015 |
| Average Annual Miles Driven Per Driver | 8,685 | 9,917 | 10,288 |
| Vehicles | - | 120,098 | 143,714 |
| Autos* | 72,500 | 95,052 | 112,475 |
| Average Annual Miles Per Vehicle | 11,600 | 10,679 | 10,315 |

*Includes automobiles, station wagons, and passenger vans.

Note: All numbers in thousands, except for average annual miles.

LICENSED DRIVERS: AGE, SEX

In 1983, the proportion of adult males (age 16 and older) holding drivers licenses continued to exceed the rate for women, as shown in Table 4-1; however, the gap between the rates continued to decrease. The 1983 NPTS showed 90.3 percent of adult men had drivers licenses, up insignificantly from 90.0 percent in 1977, and 87.0 percent in 1969. Whereas only 77.6 percent of adult women had licenses in 1983 compared to 90.3 percent for men, this represents a considerable increase over the 1977 rate of 74.0 percent, and 61.2 percent in 1969.

Part of this increase is due to the increased entry of women into the workforce and resultant increases in household income and vehicle ownership. The increase is also partly due to the shift of existing drivers through the age distribution, where large numbers of older persons previously did not hold drivers licenses.

For both sexes, advancing age is less of a factor in the likelihood of possessing a drivers license. Whereas only 66.3 percent of men 65 and older held licenses in 1969, 82.1 percent held licenses in 1983. For women the rate jumped from only 26.3 percent in 1969 to 48.9 percent in 1983.

Surprisingly, perhaps, licensing rates for young adults of both sexes have dropped. Males, aged 16-19, reversed a prior growth trend with a decline in incidence from 72.7 percent in 1977 to 69.8 percent in 1983, while young women of the same age group dropped from 65.8 percent to 58.9 percent.

Figures 4-1 and 4-2 show the proportion of adult males and females, respectively, who held drivers licenses in each age group for the years 1969, 1977, and 1983.

**TABLE 4-1
DISTRIBUTION OF ADULTS BY AGE AND SEX AND PERCENT WITH DRIVERS LICENSE**

| Age Group | Male | | Female | | All | |
|-----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|
| | Percent of Adults | Percent with License | Percent of Adults | Percent with License | Percent of Adults | Percent with License |
| 1969 | | | | | | |
| 16-19 | 5.3 | 70.1 | 5.3 | 53.6 | 10.6 | 61.9 |
| 20-34 | 14.2 | 93.1 | 15.0 | 77.7 | 29.2 | 85.2 |
| 35-54 | 15.9 | 94.0 | 17.0 | 71.5 | 32.9 | 82.4 |
| 55-64 | 6.2 | 89.1 | 6.9 | 49.7 | 13.1 | 68.4 |
| 65 and over | 5.9 | 66.3 | 8.3 | 26.3 | 14.2 | 43.0 |
| TOTAL | 47.5 | 87.0 | 52.5 | 61.2 | 100.0 | 73.6 |
| Adults (in Thousands) | 66,652 | 57,988 | 73,526 | 44,998 | 140,178 | 102,986 |
| 1977 | | | | | | |
| 16-19 | 5.2 | 72.7 | 5.2 | 65.8 | 10.4 | 69.2 |
| 20-34 | 16.1 | 95.2 | 17.0 | 87.4 | 33.1 | 91.1 |
| 35-54 | 14.1 | 94.8 | 15.5 | 82.8 | 29.6 | 88.6 |
| 55-64 | 5.9 | 92.0 | 6.9 | 68.1 | 12.8 | 79.1 |
| 65 and over | 5.8 | 76.5 | 8.3 | 40.0 | 14.1 | 55.0 |
| TOTAL | 47.1 | 90.0 | 52.9 | 74.0 | 100.0 | 81.5 |
| Adults (in Thousands) | 74,542 | 66,199 | 83,721 | 61,353 | 158,263 | 127,552 |
| 1983 | | | | | | |
| 16-19 | 4.4 | 69.8 | 4.3 | 58.9 | 8.7 | 64.4 |
| 20-34 | 17.0 | 93.6 | 17.6 | 87.4 | 34.6 | 90.4 |
| 35-54 | 14.3 | 93.6 | 15.1 | 87.2 | 29.4 | 90.3 |
| 55-64 | 6.3 | 95.5 | 7.1 | 77.8 | 13.4 | 86.1 |
| 65 and over | 5.6 | 82.1 | 8.3 | 48.9 | 13.9 | 62.3 |
| TOTAL | 47.6 | 90.3 | 52.4 | 77.6 | 100.0 | 83.6 |
| Adults (in Thousands) | 83,645 | 75,639 | 92,080 | 71,376 | 175,725 | 147,015 |

**FIGURE 4-1
CHANGES IN PERCENT OF ADULT MALES WITH DRIVERS LICENSE BY AGE**

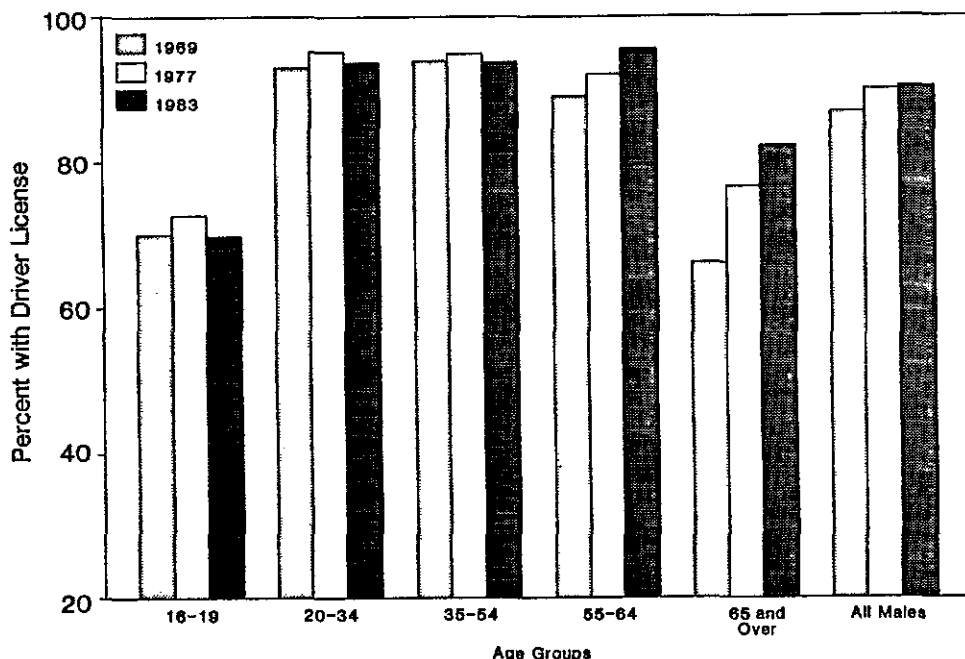
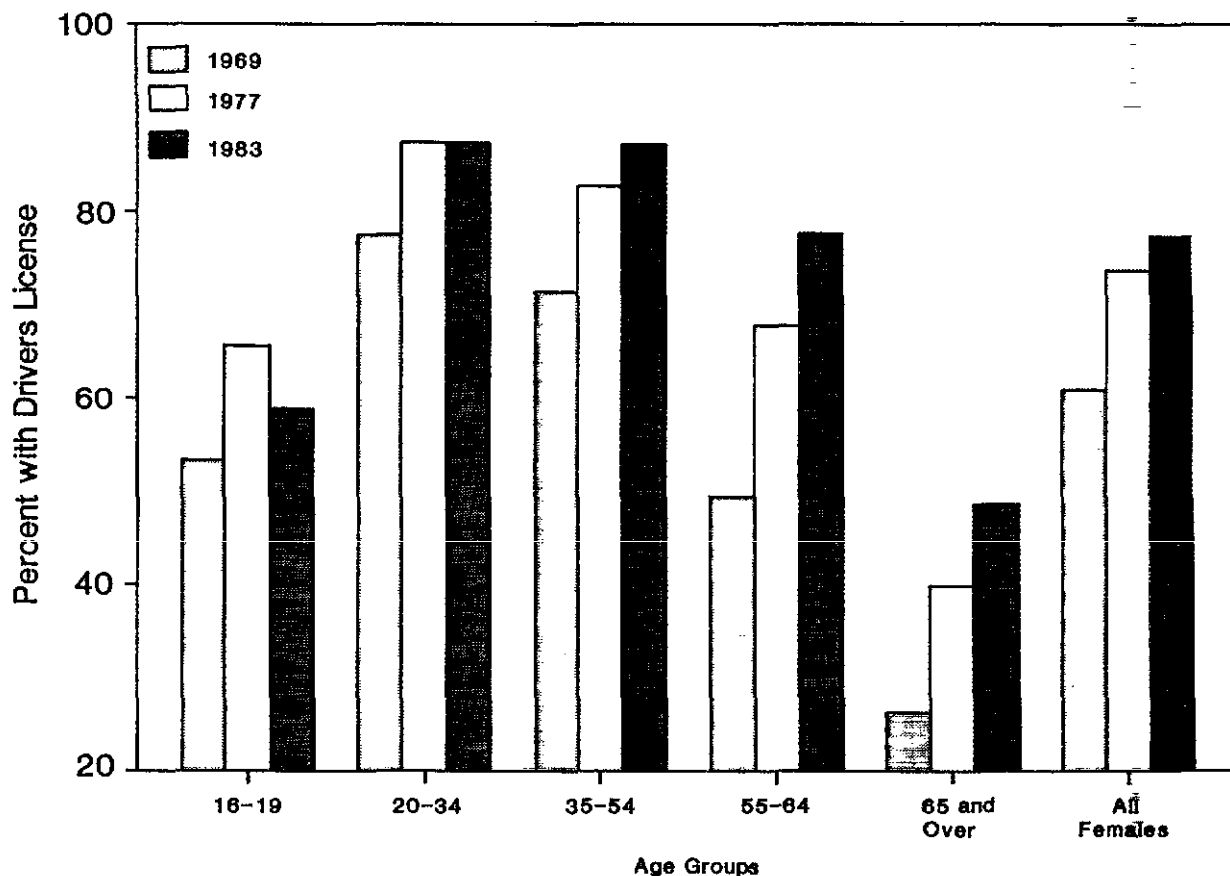


FIGURE 4-2
CHANGES IN PERCENT OF ADULT FEMALES WITH DRIVERS LICENSE BY AGE



LICENSED DRIVERS: HOUSEHOLD INCOME

An individual's likelihood of possessing a drivers license increases as household income increases (see Table 4-2). In 1983, 92.8 percent of all individuals in households with annual incomes of \$40,000 or greater had licenses, compared to only 62.5 percent of those with incomes under \$10,000 per year.

This continued the relationship seen in the 1977 NPTS, except that the rates of licensing were higher for all income categories, excluding the highest income group (\$40,000 and over) where there appears to have been a slight drop between 1977 and 1983.

Figure 4-3 displays, for the years 1977 and 1983, the proportion of adults with drivers licenses in each income category.

TABLE 4-2
DISTRIBUTION OF ADULTS BY ANNUAL HOUSEHOLD INCOME
AND PERCENT WITH DRIVERS LICENSE

| Annual Household Income (1983 Dollars) | 1977 | | 1983 | |
|---|----------------------|---------------------------------------|----------------------|---------------------------------------|
| | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License |
| Less than \$10,000 | 19.4 | 58.3 | 20.6 | 62.5 |
| \$10,000-\$19,999 | 24.7 | 79.3 | 25.6 | 83.8 |
| \$20,000-\$29,999 | 29.1 | 88.5 | 22.2 | 90.3 |
| \$30,000-\$39,999 | 11.7 | 92.0 | 13.8 | 92.7 |
| \$40,000 and over | 15.1 | 93.1 | 17.8 | 92.8 |
| TOTAL | 100.0 | 81.5 | 100.0 | 83.6 |
| Adults (000) | 158,263 | 127,552 | 175,725 | 147,015 |

LICENSED DRIVERS: PLACE OF RESIDENCE

Table 4-3 shows a decline between 1977 and 1983 in the percentages of adult population which resided in non-SMSA areas and in central city portions of SMSA's. In non-central cities of SMSA's, the adult population rose 8.3 percentage points during the period to a 1983 figure of 41.2 percent. Despite this shift in population, the percentage of those holding drivers licenses rose during the period in all areas. In 1983, approximately 86 percent of the adult population in non-SMSA's had drivers licenses. The lowest proportion of adults with drivers licenses was found in SMSA's central cities (76.3 percent).

FIGURE 4-3
CHANGES IN ADULTS WITH DRIVERS LICENSE BY ANNUAL HOUSEHOLD INCOME

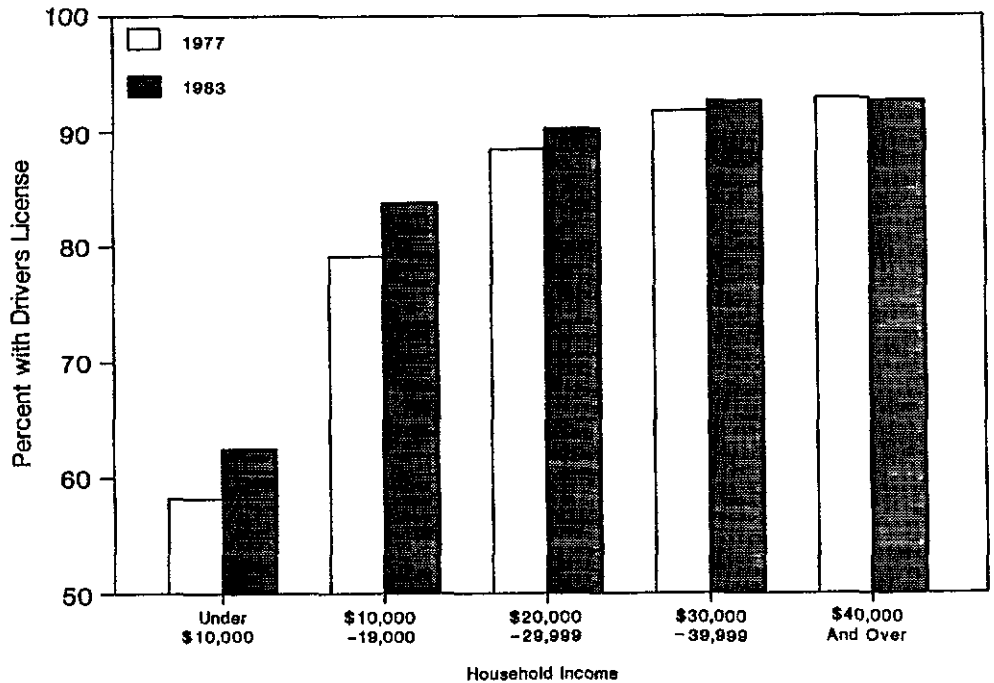


TABLE 4-3
DISTRIBUTION OF ADULTS BY PLACE OF RESIDENCE AND DRIVER STATUS

| Place of Residence | 1969 | | 1977 | | 1983 | |
|------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|
| | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License |
| SMSA, Central City | 35.6 | 81.0 | 34.0 | 85.4 | 30.4 | 76.3 |
| SMSA, Non-Central City | 29.2 | 62.6 | 32.9 | 75.3 | 41.2 | 87.4 |
| Non-SMSA | 35.2 | 76.1 | 33.1 | 83.6 | 24.8 | 85.9 |
| TOTAL | 100.0 | 73.9 | 100.0 | 81.5 | 100.0* | 83.6 |
| Adults (000) | 137,113 | 102,986 | 158,263 | 127,352 | 175,725 | 147,015 |

*Includes 3.6 percent of adults living in SMSA's but location unknown.

LICENSED DRIVERS: SMSA SIZE

Table 4-4 outlines declines in the proportion of adult population which took place between 1977 and 1983 in SMSA's of population between 250,000 and 999,999. SMSA's of all other population categories increased these proportions of adult population. A decline of over 8 percentage points in the proportion of adult population in areas outside of SMSA's was evidenced during the

period. Except for SMSA's of population 3,000,000 or greater, where the proportion of adults holding drivers licenses in 1983 remained at the 1977 level of 73.5 percent, each of the other SMSA size categories (and the non-SMSA's) showed increases in the proportion holding drivers licenses. Interestingly, in 1983 the proportion of adults with drivers licenses decreased as the SMSA size increased.

TABLE 4-4
DISTRIBUTION OF ADULTS AND PERCENT WITH DRIVERS
LICENSE BY SMSA SIZE GROUP

| SMSA Size | 1969 | | 1977 | | 1983 | |
|------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|
| | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License |
| Less than 250,000 | Unknown | Unknown | 8.4 | 83.8 | 11.2 | 87.1 |
| 250,000 to 499,999 | Unknown | 75.0 | 10.3 | 84.7 | 10.0 | 86.9 |
| 500,000 to 999,999 | Unknown | 72.0 | 10.7 | 82.2 | 9.7 | 85.4 |
| 1,000,000 to 2,999,999 | Unknown | 71.5 | 21.2 | 81.4 | 21.6 | 84.5 |
| 3,000,000 or More | Unknown | 65.1 | 16.3 | 73.5 | 17.6 | 73.5 |
| All SMSA's | 67.4 | 72.2 | 66.9 | 79.8 | 75.2* | 82.9 |
| Not in SMSA's | 32.6 | 81.1 | 33.1 | 83.6 | 24.8 | 85.9 |
| TOTAL | 100.0 | 75.1 | 100.0 | 81.5 | 100.0 | 83.6 |
| Adults (000) | 137,113 | 102,986 | 158,263 | 127,552 | 175,725 | 147,015 |

*Includes 5.1 percent of adults living in unknown SMSA size.

**LICENSED DRIVERS:
EMPLOYMENT STATUS, SEX**

As might be expected, persons who hold jobs have a greater need for mobility than those who do not, and, through higher incomes, are more likely to own vehicles; hence, workers are more likely to have drivers licenses.

Table 4-5 shows that, in 1983, 93.8 percent of all working adults had licenses, compared to 68.2 percent of non-workers; up slightly from 1977. The biggest change was in working women: an increased number of women joined the workforce, and a higher percentage of those who worked now

have licenses. The number of working women with licenses grew by 27.4 percent in the period between 1977 and 1983, based on a 22.3 percent increase in the number of women working, and a 4.1 percent increase in the rate at which this group held drivers licenses.

**TABLE 4-5
DISTRIBUTION OF ADULTS BY EMPLOYMENT STATUS AND SEX
AND PERCENT WITH DRIVER LICENSE**

| Employment Status | 1969 | | 1977 | | 1983 | |
|---------------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|
| | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License | Percent of Adults | Percent with Drivers License |
| Employed Full Time or Part Time | | | | | | |
| Male | 36.3 | 93.5 | 35.1 | 95.4 | 34.4 | 95.8 |
| Female | 20.8 | 74.1 | 23.6 | 87.5 | 26.0 | 91.1 |
| All | 57.1 | 86.4 | 58.7 | 92.2 | 60.4 | 93.8 |
| Not Employed | | | | | | |
| Male | 10.5 | 64.8 | 12.1 | 73.6 | 13.2 | 76.0 |
| Female | 32.4 | 54.9 | 29.2 | 62.9 | 26.4 | 64.2 |
| All | 42.9 | 57.3 | 41.3 | 66.0 | 39.6 | 68.2 |
| TOTAL | 100.0 | 75.1 | 100.0 | 81.5 | 100.0 | 83.6 |
| Adults (000) | 137,113 | 102,986 | 158,263 | 127,552 | 175,725 | 147,015 |

LICENSED DRIVERS, ESTIMATED AVERAGE ANNUAL MILES DRIVEN: SEX

As shown in Table 4-6, the average annual miles driven by licensed drivers increased between 1969 and 1983. During this period, male drivers increased their annual driving mileage by 23 percent. The increase for female drivers was almost 18 percent. Between 1977 and 1983, however, the increase in average annual miles driven by females (7.4 percent) was greater than for males (4.2 percent).

The 59 percent increase in female drivers between 1969 and 1983 reflects the previously described patterns for the period and is almost double the increase in the number of male drivers during the period.

**TABLE 4-6
ESTIMATED AVERAGE ANNUAL MILES DRIVEN
BY LICENSED DRIVERS**

| | Male | Female | All |
|-------------------------|--------|--------|---------|
| 1969 | | | |
| Number of Drivers (000) | 57,988 | 44,998 | 102,986 |
| Annual Miles | 11,352 | 5,411 | 8,685 |
| 1977 | | | |
| Number of Drivers (000) | 66,199 | 61,353 | 127,552 |
| Annual Miles | 13,397 | 5,940 | 9,917 |
| 1983 | | | |
| Number of Drivers (000) | 75,639 | 71,376 | 147,015 |
| Annual Miles | 13,962 | 6,382 | 10,288 |

**ESTIMATED AVERAGE ANNUAL MILES
DRIVEN: EMPLOYMENT STATUS, SEX**

Employed drivers drove significantly more miles per year in 1983 (120 percent) than unemployed drivers (Table 4-7). Employed males drove an average of 15,882 miles per year in 1983, compared to 7,654 for unemployed males or 107 percent more, while employed women drove 7,738 miles versus 4,473 miles for unemployed, or 73 percent more.

What is perhaps most surprising is the difference between miles driven by male and female drivers, particularly those who are employed: employed males drive more than twice as many miles as employed females.

Annual average mileage for all driver classes except unemployed women increased between 1977 and 1983.

**TABLE 4-7
ESTIMATED AVERAGE ANNUAL MILES PER LICENSED DRIVER
BY SEX AND EMPLOYMENT STATUS**

| <u>Employment Status</u> | <u>1977</u> | <u>1983</u> |
|------------------------------------|-------------|-------------|
| Employed Full Time or Part Time | | |
| Male | 14,932 | 15,882 |
| Female | 7,165 | 7,738 |
| All | 12,042 | 12,480 |
| Not Employed | | |
| Male | 7,314 | 7,654 |
| Female | 4,498 | 4,473 |
| All | 5,438 | 5,663 |
| ALL DRIVERS | 9,917 | 10,288 |

**ESTIMATED AVERAGE ANNUAL MILES
DRIVEN: HOUSEHOLD INCOME**

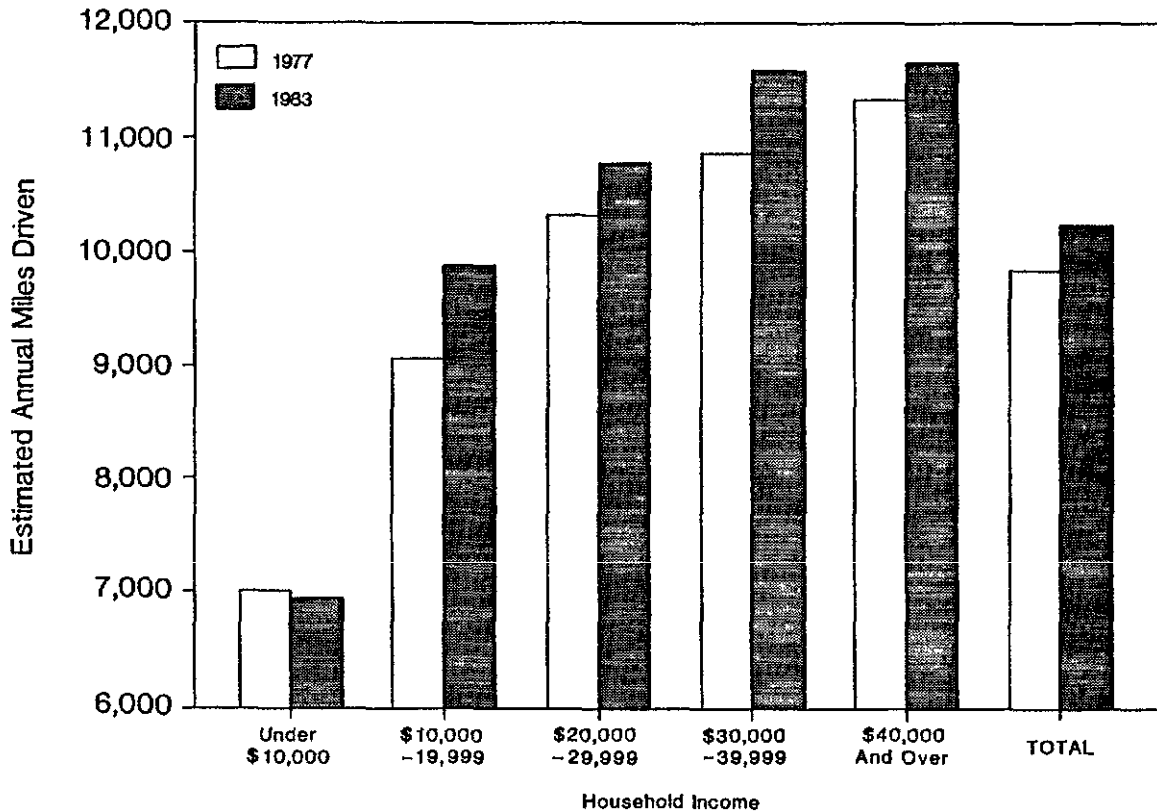
Just as the likelihood of acquiring a drivers license increases with income, so does annual vehicle miles driven. As Table 4-8 indicates, annual miles driven by licensed drivers in 1983 increased directly with the level of household income, from a low of 6,962 miles per driver in households with annual incomes under \$10,000 to 11,706 miles per driver in households with incomes of \$40,000 and over.

Between 1977 and 1983, annual miles per driver increased overall by 3.7 percent, and increased for drivers in all income classes except under \$10,000. Drivers with incomes of \$10,000-\$19,999 showed the highest increase at 9.7 percent (Figure 4-4).

**TABLE 4-8
ESTIMATED AVERAGE ANNUAL MILES DRIVEN PER LICENSED
DRIVER BY HOUSEHOLD INCOME**

| <u>Annual Income (1983 Dollars)</u> | <u>1977</u> | <u>1983</u> |
|---|-------------|-------------|
| Under \$10,000 | 7,040 | 6,962 |
| \$10,000 - 19,999 | 9,108 | 9,989 |
| \$20,000 - 29,999 | 10,393 | 10,801 |
| \$30,000 - 39,999 | 10,950 | 11,616 |
| \$40,000 and Over | 11,410 | 11,706 |
| ALL HOUSEHOLDS | 9,917 | 10,288 |

FIGURE 4-4
CHANGES IN ESTIMATED AVERAGE ANNUAL MILES PER LICENSED
DRIVER BY HOUSEHOLD INCOME



**ESTIMATED AVERAGE ANNUAL MILES
DRIVEN: SMSA SIZE**

Estimated average annual miles driven do not vary greatly among persons living inside or outside SMSA's, or for SMSA residents among different SMSA size groups. As Table 4-9 shows, in 1983, drivers living outside SMSA's logged the greatest number of annual miles, 10,999, while drivers residing within SMSA's of 250,000 to 499,999 population drove about the same mileage. Drivers in the largest SMSA's (3,000,000 or more) drove the fewest annual miles (9,506 in 1983), presumably due to the availability of public transportation facilities.

Mileage for drivers in all SMSA's increased between 1977 and 1983, except in the largest SMSA's where annual miles declined slightly.

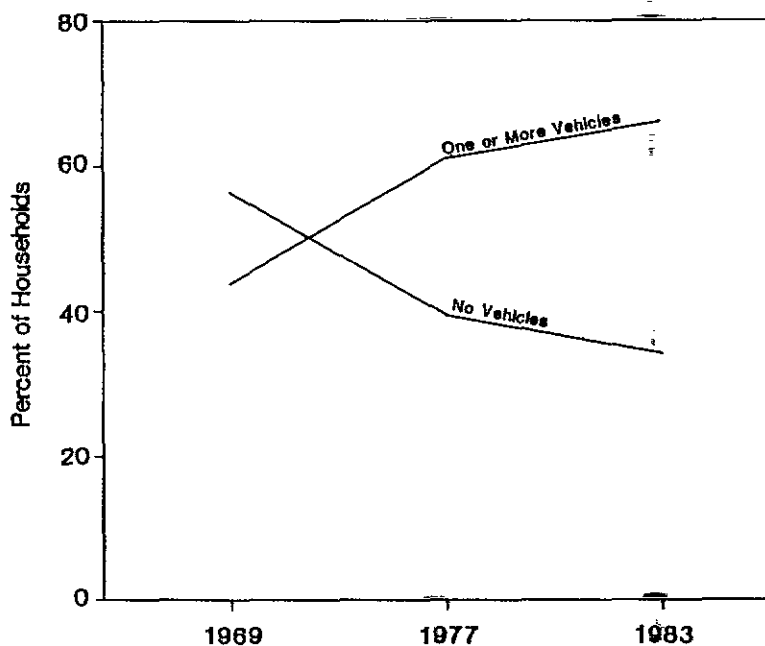
TABLE 4-9
ESTIMATED AVERAGE ANNUAL MILES DRIVEN PER
DRIVER BY SMSA SIZE

| <u>SMSA Size</u> | <u>1977</u> | <u>1983</u> |
|-----------------------|-------------|-------------|
| Less than 250,000 | 9,698 | 9,751 |
| 250,000 - 499,999 | 9,619 | 10,983 |
| 500,000 - 999,999 | 9,990 | 10,265 |
| 1,000,000 - 2,999,999 | 10,112 | 10,368 |
| 3,000,000 or More | 9,777 | 9,506 |
| All SMSA's | 9,750 | 9,956 |
| Not in SMSA | 9,985 | 10,999 |
| TOTAL | 9,917 | 10,288 |

VEHICLE OWNERSHIP: NUMBER OF ADULTS

Table 4-10 shows the distribution of vehicles available to one, two, and three or more adult households for the years 1969, 1977, and 1983. Vehicle ownership has been increasing steadily over time, as reflected in a significant decline in the number of households without vehicles. Except for one-adult households, the percentage of households with three or more vehicles available increased substantially over time. Figure 4-5 shows the change between 1969 and 1983 for one-adult households. Figure 4-6 displays similar relationships for two-adult households, and Figure 4-7 focuses on three-adult households.

**FIGURE 4-5
CHANGES IN VEHICLE¹ OWNERSHIP* FOR ONE ADULT HOUSEHOLDS**



**TABLE 4-10
DISTRIBUTION OF HOUSEHOLDS BY VEHICLE OWNERSHIP* AND
NUMBER OF ADULTS**

| | 1969 ¹ | 1977 | 1983 |
|---------------------------------------|-------------------|------|------|
| One Adult Households | | | |
| No Vehicle | 56.2 | 39.2 | 34.0 |
| One Vehicle | 42.3 | 53.2 | 57.1 |
| Two Vehicles | 1.5 | 5.7 | 7.1 |
| Three or More Vehicles | .0 | 1.9 | 1.8 |
| Two Adult Households | | | |
| No Vehicle | 12.4 | 7.5 | 5.8 |
| One Vehicle | 57.3 | 33.1 | 29.2 |
| Two Vehicles | 29.1 | 48.2 | 49.7 |
| Three or More Vehicles | 1.2 | 11.2 | 15.3 |
| Three or More Adult Households | | | |
| No Vehicle | 8.2 | 5.9 | 5.6 |
| One Vehicle | 32.2 | 15.9 | 13.5 |
| Two Vehicles | 42.6 | 34.4 | 27.1 |
| Three or More Vehicles | 17.0 | 43.8 | 53.8 |
| All Households | | | |
| No Vehicle | 20.6 | 15.3 | 13.5 |
| One Vehicle | 48.4 | 34.7 | 33.7 |
| Two Vehicles | 26.4 | 34.4 | 33.5 |
| Three or More Vehicles | 4.6 | 15.6 | 19.3 |

*All vehicles owned by or available on a regular basis to the household.

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Consideration for a more detailed explanation.

FIGURE 4-6
 CHANGES IN VEHICLE OWNERSHIP* FOR TWO ADULT HOUSEHOLDS

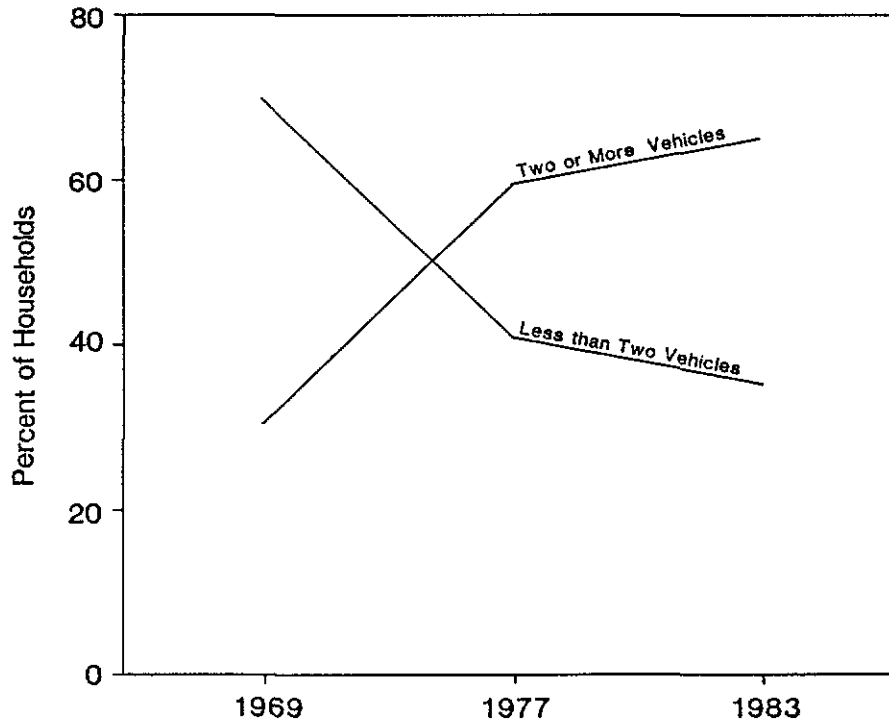
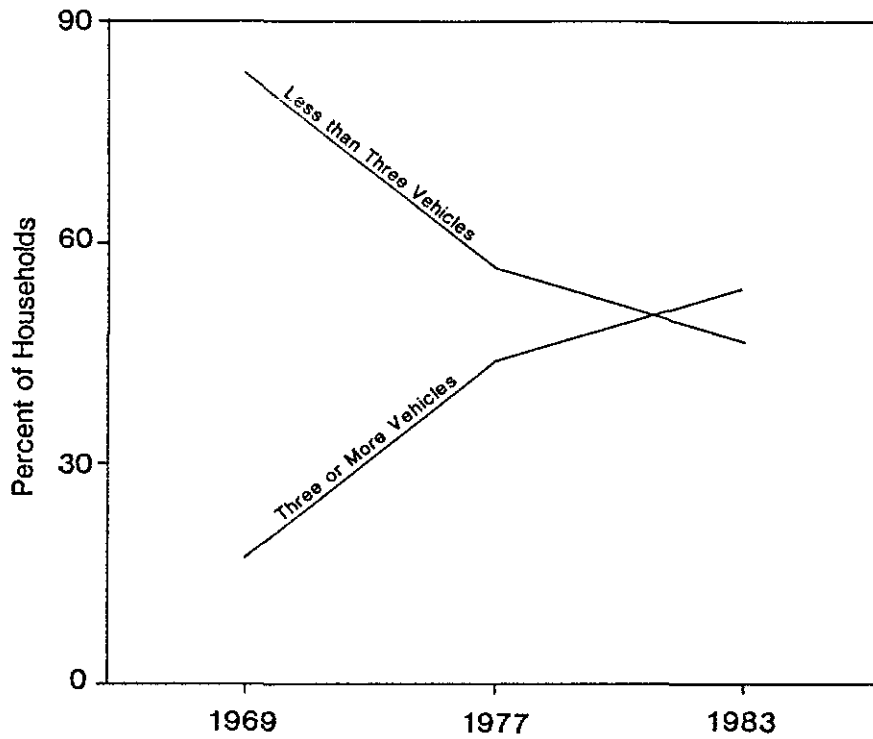


FIGURE 4-7
 CHANGES IN VEHICLE OWNERSHIP* FOR THREE OR MORE ADULT HOUSEHOLDS



*All vehicles owned by or available on a regular basis to the household.

VEHICLE OWNERSHIP: LICENSED DRIVERS

Table 4-11 displays relationships similar to those in Table 4-10. Again, except for households with a single licensed driver, the proportion of households with three or more vehicles shows a strong trend toward increasing vehicle ownership over time.

Figure 4-8 shows the ratio of vehicles to licensed drivers for 1969, 1977, and 1983.

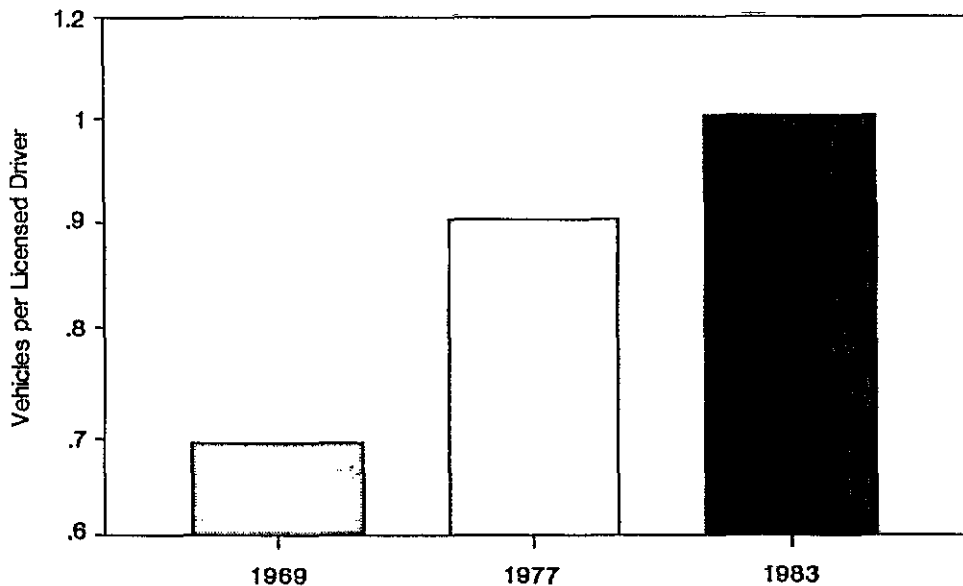
**TABLE 4-11
DISTRIBUTION OF HOUSEHOLDS BY VEHICLE OWNERSHIP*
AND LICENSED DRIVERS**

| | <u>1969¹</u> | <u>1977</u> | <u>1983</u> |
|--|-------------------------|-------------|-------------|
| One Licensed Driver Households | | | |
| No Vehicle | 15.6 | 9.6 | 11.2 |
| One Vehicle | 79.2 | 67.8 | 70.6 |
| Two Vehicles | 5.1 | 17.1 | 13.8 |
| Three or More Vehicles | 0.1 | 5.5 | 4.4 |
| Two Licensed Drivers Households | | | |
| No Vehicle | 2.3 | 1.1 | 1.2 |
| One Vehicle | 52.5 | 24.1 | 22.0 |
| Two Vehicles | 43.0 | 58.7 | 57.1 |
| Three or More Vehicles | 2.2 | 16.1 | 19.7 |
| Three or More Licensed Drivers Households | | | |
| No Vehicle | 0.8 | 0.4 | 0.1 |
| One Vehicle | 17.2 | 5.7 | 4.6 |
| Two Vehicles | 51.7 | 30.7 | 24.4 |
| Three or More Vehicles | 30.3 | 63.2 | 70.9 |
| All Households | | | |
| No Vehicle | 20.6 | 15.3 | 13.5 |
| One Vehicle | 48.4 | 34.7 | 33.7 |
| Two Vehicles | 26.4 | 34.4 | 33.5 |
| Three or More Vehicles | 4.6 | 15.6 | 19.3 |

*Includes all vehicles owned by or available on a regular basis to the household.

¹1969 vehicles include autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**FIGURE 4-8
CHANGES IN NUMBER OF VEHICLES¹ PER LICENSED DRIVER**



¹1969 vehicles include autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**VEHICLE OWNERSHIP: HOUSEHOLD
INCOME**

Table 4-12 shows a continual increase between 1969 and 1983 in the proportion of households with three or more vehicles available. The rise in this proportion between the two survey years increased as the household income

rose. Not surprisingly, as household income increased, the vehicle ownership category with the highest proportion of households also increased over time. In 1969, the highest proportion of households with incomes of under

\$10,000 had no vehicles available, while in 1983 the highest proportion of households in the highest income category was in the two-vehicle category, followed closely by the three-or-more vehicle category.

**TABLE 4-12
DISTRIBUTION OF HOUSEHOLDS BY VEHICLE OWNERSHIP*
AND ANNUAL HOUSEHOLD INCOME**

| Annual Household Income (1983 Dollars) | 1969 ¹ | | | | 1977 | | | | 1983 | | | |
|--|--------------------|------|------|------|--------------------|------|------|------|--------------------|------|------|------|
| | Number of Vehicles | | | | Number of Vehicles | | | | Number of Vehicles | | | |
| | None | 1 | 2 | 3+ | None | 1 | 2 | 3+ | None | 1 | 2 | 3+ |
| Under \$10,000 | 54.5 | 40.3 | 4.9 | .3 | 41.9 | 41.7 | 12.5 | 3.9 | 39.5 | 42.8 | 13.6 | 4.1 |
| \$10,000 - \$19,999 | 15.3 | 61.1 | 21.0 | 2.6 | 12.6 | 47.6 | 29.8 | 10.0 | 8.9 | 46.2 | 31.6 | 13.3 |
| \$20,000 - \$39,999 | 3.8 | 51.0 | 39.0 | 6.2 | 3.7 | 27.8 | 47.6 | 20.9 | 2.0 | 25.7 | 46.6 | 25.7 |
| \$40,000 and Over | 1.2 | 27.4 | 55.2 | 16.2 | 2.1 | 14.2 | 48.3 | 35.4 | 1.1 | 12.2 | 43.8 | 42.9 |
| TOTAL | 20.6 | 48.4 | 26.4 | 4.6 | 15.3 | 34.7 | 34.4 | 15.6 | 13.5 | 33.7 | 33.5 | 19.3 |

*All vehicles owned by or available to the household on a regular basis.

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

VEHICLE OWNERSHIP: PLACE OF RESIDENCE

Between 1969 and 1983, the number of vehicles per household increased in all residence area categories (Table 4-13). Within SMSA's the largest increase (0.4 vehicles per household) occurred outside central cities. Outside SMSA's, there was an increase of 0.7 vehicles per household.

**TABLE 4-13
AVERAGE NUMBER OF VEHICLES* PER HOUSEHOLD
BY PLACE OF RESIDENCE**

| | <u>1969¹</u> | <u>1977</u> | <u>1983</u> |
|------------------------|-------------------------|-------------|-------------|
| SMSA, Central City | 1.0 | 1.3 | 1.3 |
| SMSA, Non-Central City | 1.5 | 1.7 | 1.9 |
| Non-SMSA | 1.2 | 1.7 | 1.9 |
| ALL AREAS | 1.2 | 1.6 | 1.7 |

*All vehicles owned by or available on a regular basis to the household.

¹1969 vehicles included auto and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

VEHICLE TYPES

Table 4-14 indicates the proportion of each vehicle type in both the 1977 and 1983 household vehicle fleet. Between 1977 and 1983, the proportion of standard automobiles and station wagons dropped over 3 percentage points to 75.9 percent of all household vehicles. This decline was offset by a 3.2 percentage point increase in the proportion of trucks and vans (including a 2.2 percentage point increase in pickup trucks alone). A slight increase occurred in the proportion of each type of recreation vehicle owned, except for motorcycles, which declined 0.2 percentage points during the period.

**TABLE 4-14
DISTRIBUTION OF HOUSEHOLD VEHICLES BY TYPE**

| <u>Vehicle Type</u> | <u>Percent of Vehicles by Type</u> | |
|------------------------------|------------------------------------|--------------|
| | <u>1977</u> | <u>1983</u> |
| Autos | | |
| Standard | 71.4 | 68.8 |
| Station Wagon | 8.2 | 7.1 |
| Subtotal | 79.6 | 75.9 |
| Trucks and Vans | | |
| Vans/Minibus | 2.0 | 2.3 |
| Other Van | 0.8 | 1.3 |
| Pickup | 12.0 | 14.2 |
| Other Truck | 1.3 | 1.5 |
| Subtotal | 16.1 | 19.3 |
| Recreational Vehicles | | |
| Pickup with Camper | 0.8 | 1.0 |
| Camper Coach | 0.4 | 0.5 |
| Motorcycle | 2.7 | 2.5 |
| Moped | 0.2 | 0.6 |
| Total | 4.1 | 4.6 |
| Other Vehicles | 0.2 | 0.2 |
| TOTAL | 100.0 | 100.0 |
| Number of Vehicles (000) | 120,098 | 143,714 |

AGE OF VEHICLES: VEHICLE TYPE

Table 4-15 lists the percentage distribution of each vehicle type by vehicle age in years, and shows a general aging of the household vehicle fleet over time. Between 1977 and 1983, the highest percentage of all vehicles for a single year moved from age 4 years (10.4 percent of all vehicles in 1977) to age five years (9.9 percent of all vehicles in 1983).

At the same time, the average age of all vehicles climbed from 5.7 years in 1977 to 6.9 years in 1983. Recreational vehicles showed the greatest change in average age, climbing from the lowest average age, 4.7 years in 1977, to the highest, 8.5 years in 1983.

For autos (the only data available for 1969), the average age increased from 5.1 years in 1969 to 6.7 years in 1983, while the

highest percentage of autos increased from an average age of 1 year in 1969 to 5 years in 1983.

Figure 4-9 outlines the average vehicle age for each vehicle type for the years 1977 and 1983 (1969, 1977, and 1983 for autos).

Figure 4-10 shows the distribution of all autos by age for the years 1969, 1977, and 1983.

TABLE 4-15
DISTRIBUTION OF HOUSEHOLD VEHICLES BY AGE AND TYPE,
AVERAGE VEHICLE AGE (YEARS) BY TYPE

| Vehicle Type | Less Than 1 Year | One | Two | Three | Four | Five | Six | Seven | Eight | Nine | Ten or More | Total | Average Age |
|-----------------|------------------|------|------|-------|------|------|-----|-------|-------|------|-------------|-------|-------------|
| 1969 | | | | | | | | | | | | | |
| Autos | 12.6 | 16.9 | 12.3 | 11.4 | 12.2 | 8.3 | 7.7 | 5.5 | 4.2 | 2.7 | 6.2 | 100.0 | 5.1 |
| 1977 | | | | | | | | | | | | | |
| Autos | 9.4 | 9.8 | 8.1 | 9.9 | 10.6 | 9.9 | 7.5 | 7.1 | 6.6 | 5.5 | 15.6 | 100.0 | 5.5 |
| Trucks and Vans | 11.0 | 10.5 | 8.4 | 8.2 | 9.3 | 8.1 | 5.3 | 5.2 | 6.1 | 4.5 | 23.4 | 100.0 | 6.4 |
| RV's | 11.1 | 14.1 | 11.6 | 12.2 | 9.3 | 10.4 | 4.8 | 6.5 | 4.3 | 4.5 | 11.2 | 100.0 | 4.7 |
| All | 9.7 | 9.9 | 8.2 | 9.7 | 10.4 | 9.6 | 7.1 | 6.8 | 6.5 | 5.3 | 16.8 | 100.0 | 5.7 |
| 1983 | | | | | | | | | | | | | |
| Autos | 5.1 | 7.1 | 7.8 | 8.3 | 9.7 | 10.0 | 8.1 | 7.9 | 5.3 | 6.1 | 24.6 | 100.0 | 6.7 |
| Trucks and Vans | 5.2 | 5.9 | 5.5 | 6.7 | 9.9 | 10.0 | 7.7 | 6.4 | 5.2 | 5.7 | 31.8 | 100.0 | 7.8 |
| RV's | 0.4 | 4.1 | 6.5 | 3.5 | 10.3 | 7.2 | 8.1 | 8.9 | 3.8 | 8.7 | 38.5 | 100.0 | 8.5 |
| All | 5.1 | 6.8 | 7.3 | 7.9 | 9.8 | 9.9 | 8.0 | 7.7 | 5.2 | 6.0 | 26.3 | 100.0 | 6.9 |

FIGURE 4-9
CHANGES IN AVERAGE VEHICLE AGE BY TYPE

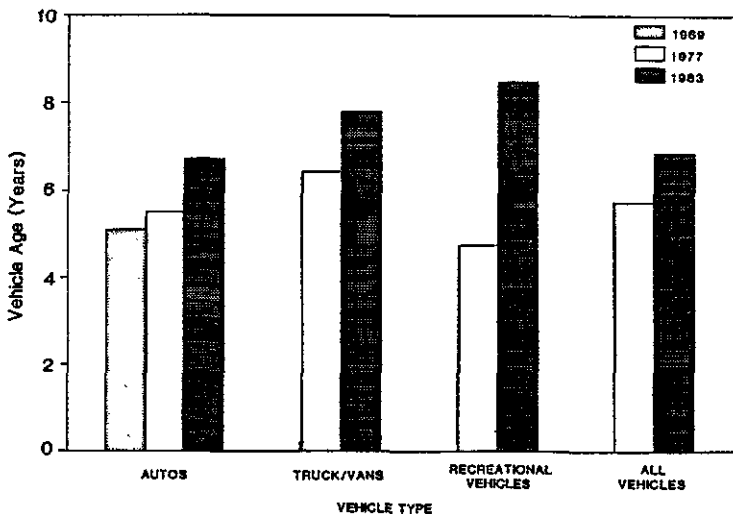
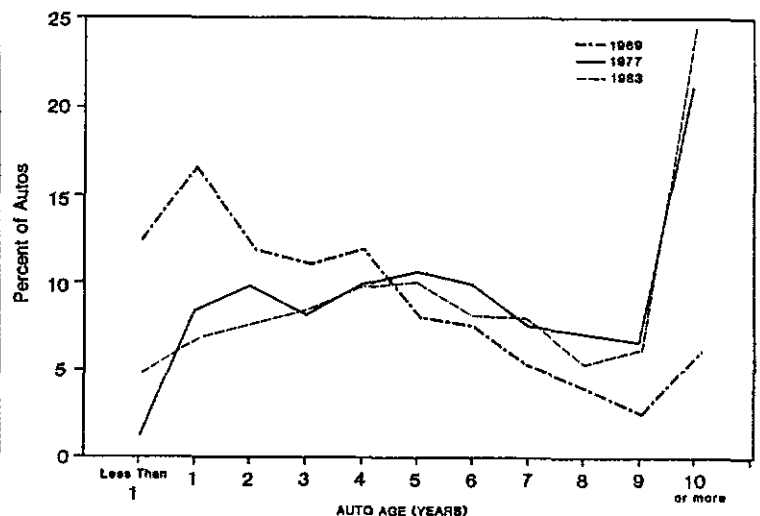


FIGURE 4-10
CHANGES IN DISTRIBUTION OF AUTOS BY AGE



VEHICLES: METHOD OF OWNERSHIP

Table 4-16 shows a 3.4 percentage point increase between 1969 (90.2) and 1977 (93.6) in the proportion of vehicles owned by household members. This percentage remained constant between 1977 and 1983. However, the definite trend throughout the 1969 to 1983 period has been away from the purchase of new vehicles. The proportion of household vehicles purchased new dropped from 44.8 percent in 1969 to 42.8 percent in 1983. Conversely, household vehicles purchased used rose 5.4 percentage points over the period to account for over half of the 1983 household vehicles.

**TABLE 4-16
DISTRIBUTION OF HOUSEHOLD VEHICLES BY METHOD OF
OWNERSHIP AND WHETHER PURCHASED NEW OR USED**

| Method of Ownership | 1969 ¹ | | 1977 | | 1983 | |
|--------------------------------------|---------------------|-------------|---------------------|-------------|---------------------|-------------|
| | Percent of Vehicles | Average Age | Percent of Vehicles | Average Age | Percent of Vehicles | Average Age |
| Owned by Household Member | | | | | | |
| Purchased New | 44.8 | n/a | 43.8 | 3.7 | 42.8 | 4.8 |
| Purchased Used | 45.4 | n/a | 49.8 | 7.5 | 50.8 | 9.0 |
| Subtotal | 90.2 | n/a | 93.6 | 5.7 | 93.6 | 7.1 |
| Available to Household Company Owned | n/a | n/a | 3.6 | 3.3 | 4.1 | 3.6 |
| Other | n/a | n/a | 2.8 | 5.1 | 2.3 | 4.6 |
| Subtotal | 9.8 | n/a | 6.4 | 4.1 | 6.4 | 4.0 |
| ALL VEHICLES | 100.0 | 5.1 | 100.0 | 5.6 | 100.0 | 6.9 |
| Vehicles (000) | 72,500 | | 120,098 | | 143,714 | |

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**ESTIMATED AVERAGE ANNUAL MILES
PER VEHICLE: VEHICLE OWNERSHIP,
NUMBER OF ADULTS**

The relationships between the number of adults in the household, the average number of vehicles owned per household, and the average distance driven annually per household vehicle are shown in Table 4-17. Between 1977 and 1983, the number of vehicles per

household rose in every category to a peak 1983 ratio of 2.6 vehicles per household in households with three or more adults.

Between 1977 and 1983 the average number of vehicles per household increased, while the average

number of miles driven annually on each vehicle declined. Interestingly, increases in both annual mileage per vehicle and average number of vehicles per household occurred between 1977 and 1983 in one-adult households.

**TABLE 4-17
ESTIMATED ANNUAL MILES PER VEHICLE BY
NUMBER OF ADULTS**

| <u>Number of Adults</u> | <u>1977</u> | <u>1983</u> |
|---|-------------|-------------|
| One Adult Households | 9,423 | 9,517 |
| Average Number of Vehicles per Household | 0.7 | 0.8 |
| Two Adult Households | 10,785 | 10,303 |
| Average Number of Vehicles per Household | 1.7 | 1.8 |
| Three or More Adult Households | 10,943 | 10,679 |
| Average Number of Vehicles per Household | 2.4 | 2.6 |
| TOTAL HOUSEHOLDS | 10,679 | 10,315 |
| Average Number of Vehicles per Household | 1.6 | 1.7 |

**ESTIMATED ANNUAL MILES PER VEHICLE:
VEHICLE OWNERSHIP AND NUMBER OF
LICENSED DRIVERS**

Table 4-18 closely reflects many of the characteristics of Table 4-17 (Adults per Household). When the data in Tables 4-17 and 4-18 are compared, the relationships between miles driven appear fairly constant for households with two or more licensed drivers and adults. However, for households with one licensed driver or one adult, it appears that a signifi-

cant change has taken place between 1977 and 1983. During this period, the average number of vehicles in households with one licensed driver dropped 8 percent, while the average distance driven per vehicle dropped 5.6 percent. On the other hand, households with one adult showed very different trends: the average number of vehicles rose from 0.7 to 0.8 (a

14 percent increase) and the average distance driven per vehicle increased by almost 1 percent. This apparently reflects a pattern of decline of single adults without drivers licenses. In other words, households with one driver more closely reflected the characteristics of households with one adult in 1983 than in 1977.

**TABLE 4-18
ESTIMATED ANNUAL MILES PER VEHICLE BY
NUMBER OF LICENSED DRIVERS**

| <u>Number of Licensed Drivers</u> | <u>1969¹</u> | <u>1977</u> | <u>1983</u> |
|---|-------------------------|---------------|---------------|
| One Driver Households | n/a | 9,868 | 9,319 |
| Average Number of Vehicles per Household | 1.5 | 1.2 | 1.1 |
| Two Driver Households | n/a | 10,834 | 10,545 |
| Average Number of Vehicles per Household | 1.2 | 2.0 | 2.0 |
| Three or More Driver Households | n/a | 11,256 | 10,752 |
| Average Number of Vehicles per Household | 1.1 | 3.0 | 3.2 |
| TOTAL HOUSEHOLDS | 11,600 | 10,679 | 10,315 |
| Average Number of Vehicles per Household | 1.2 | 1.6 | 1.7 |

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**ESTIMATED ANNUAL MILES PER VEHICLE:
VEHICLE OWNERSHIP, HOUSEHOLD INCOME**

Table 4-19 lists both average annual distance traveled by each household vehicle and the average number of vehicles available to the household by household income. Both mileage driven per vehicle and number of vehicles held constant between 1977 and 1983 for households with household income of under \$10,000. For each of the other income categories, annual mileage driven per vehicle decreased, apparently because of the increase in number of vehicles per household in these household categories. These additional household vehicles may reflect a need to accommodate flexibility in household travel.

**TABLE 4-19
ESTIMATED ANNUAL MILES PER VEHICLE
BY HOUSEHOLD INCOME**

| <u>Annual Household Income (in 1983 Dollars)</u> | <u>1969¹</u> | <u>1977</u> | <u>1983</u> |
|--|-------------------------|---------------|---------------|
| Under \$10,000 | 7,095 | 7,964 | 7,963 |
| Average Number Vehicles per Household | .7 | .8 | .8 |
| \$10,000 - 19,999 | 10,854 | 9,954 | 9,668 |
| Average Number Vehicles per Household | 1.1 | 1.4 | 1.5 |
| \$20,000 - 39,999 | 12,200 | 11,163 | 10,791 |
| Average Number Vehicles per Household | 1.5 | 2.0 | 2.1 |
| \$40,000 and Over | 15,000 | 12,048 | 11,544 |
| Average Number Vehicles per Household | 1.9 | 2.4 | 2.6 |
| TOTAL | 11,600 | 10,679 | 10,315 |
| Average Number Vehicles per Household | 1.2 | 1.6 | 1.7 |

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**ESTIMATED ANNUAL VEHICLE MILES
PER VEHICLE: VEHICLE OWNERSHIP,
PLACE OF RESIDENCE**

Table 4-20 reflects increases between 1977 and 1983 in the average number of household vehicles in all area categories except central city portions of SMSA's, where the number remained unchanged. The average annual distance traveled per household vehicle dropped in all areas except those outside SMSA's. In those areas, an increase of almost 4 percent in the average annual miles driven was noted.

**TABLE 4-20
ESTIMATED ANNUAL MILES PER VEHICLE BY
PLACE OF RESIDENCE**

| <u>Place of Residence</u> | <u>1977</u> | <u>1983</u> |
|--|-------------|-------------|
| SMSA, Central City | 10,460 | 9,553 |
| Average Number Vehicles per Household | 1.3 | 1.3 |
| SMSA, Non-Central City | 11,139 | 10,399 |
| Average Number Vehicles per Household | 1.7 | 1.8 |
| Non-SMSA | 10,385 | 10,776 |
| Average Number Vehicles per Household | 1.7 | 1.9 |
| All Areas | 10,679 | 10,315 |
| Average Number Vehicles per Household | 1.6 | 1.7 |

**ESTIMATED ANNUAL MILES PER VEHICLE:
VEHICLE OWNERSHIP, SMSA SIZE**

Table 4-21 shows that the average number of vehicles per household increased by at least 0.3 vehicles between 1969 and 1983 in each of the five SMSA size categories.

Between 1969 and 1983, those areas outside SMSA's showed a jump of 0.7 vehicles per household (from 1.2 to 1.9). The average annual distance traveled by each household vehicle dropped over 8 percent during the period in areas outside SMSA's and almost 12 percent within SMSA's.

**TABLE 4-21
ESTIMATED ANNUAL MILES PER VEHICLE
BY SMSA SIZE**

| <u>SMSA Size</u> | <u>1969¹</u> | <u>1977</u> | <u>1983</u> |
|--|-------------------------|---------------|---------------|
| Less than 250,000 Average Number Vehicles per Household | 11,000 1.3 | 10,653 1.6 | 9,060 1.7 |
| 250,000 to 499,999 Average Number Vehicles per Household | 10,300 1.3 | 10,747 1.6 | 10,300 1.8 |
| 500,000 to 999,999 Average Number Vehicles per Household | 11,300 1.3 | 10,785 1.6 | 10,352 1.6 |
| 1,000,000 to 2,999,999 Average Number Vehicles per Household | 12,300 1.3 | 10,947 1.6 | 10,649 1.7 |
| 3,000,000 or More Average Number Vehicles per Household | 11,500 1.0 | 10,905 1.3 | 10,206 1.4 |
| All SMSA's Average Number Vehicles per Household | 11,500 1.2 | 10,838 1.5 | 10,145 1.6 |
| Not in SMSA Average Number Vehicles per Household | 11,800 1.2 | 10,385 1.7 | 10,776 1.9 |
| TOTAL Average Number Vehicles per Household | 11,600 1.2 | 10,679 1.6 | 10,315 1.7 |

¹1969 vehicles included autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

**AVERAGE ANNUAL MILES PER AUTO:
AGE OF AUTO, AUTO OWNERSHIP**

In 1977 and 1983, Table 4-22, for all categories of household vehicle ownership, indicates that maximum annual vehicle-miles were driven on one year old automobiles. This was followed by a general downward trend in vehicle-miles as age of the automobile increased. In 1969, automobiles of less than one year of age were driven most in all vehicle ownership categories, again followed by a general decline of annual miles as automobile age increased.

Maximum auto usage for the total household fleet occurred in households with three or more vehicles in 1969, and in households with two vehicles in 1977 and in 1983. This again indicates that perhaps flexibility of transportation has become more important in recent years, and that more vehicles are now available in larger households to accommodate this need.

**TABLE 4-22
ESTIMATED AVERAGE ANNUAL MILES (THOUSANDS) PER
AUTOMOBILE* BY AUTOMOBILE AGE AND VEHICLE
OWNERSHIP**

| Vehicle Age (Years) | Household Vehicle Ownership | | | |
|------------------------|-----------------------------|------|------------------|------|
| | One | Two | Three or More | All |
| 1969 | | | | |
| Under 1 | 17.5 | 17.7 | 17.1 | 17.5 |
| 1 | 14.6 | 17.4 | 16.7 | 16.1 |
| 2 | 12.6 | 13.5 | 13.7 | 13.2 |
| 3 | 11.1 | 11.5 | 12.9 | 11.4 |
| 4 | 9.6 | 12.7 | 16.9 | 11.7 |
| 5 | 9.2 | 10.1 | 12.1 | 10.0 |
| 6 | 10.5 | 9.7 | 12.2 | 10.3 |
| 7 | 8.5 | 8.9 | 8.1 | 8.6 |
| 8 | 9.4 | 12.8 | 7.0 | 10.9 |
| 9 | 7.7 | 7.2 | 12.4 | 8.0 |
| 10 and Over | 6.4 | 6.8 | 6.3 | 6.5 |
| ALL | 10.8 | 12.0 | 12.8 | 11.6 |
| 1977 | | | | |
| Under 1 | 10.1 | 13.7 | 9.6 | 11.8 |
| 1 | 12.7 | 13.9 | 13.3 | 13.4 |
| 2 | 13.2 | 13.6 | 13.1 | 13.4 |
| 3 | 11.3 | 12.4 | 12.8 | 12.1 |
| 4 | 10.5 | 11.4 | 12.4 | 11.3 |
| 5 | 10.2 | 10.9 | 10.9 | 10.7 |
| 6 | 9.6 | 11.2 | 10.7 | 10.5 |
| 7 | 9.1 | 9.6 | 10.1 | 9.5 |
| 8 | 8.2 | 8.8 | 9.1 | 8.6 |
| 9 | 8.7 | 8.9 | 8.9 | 8.8 |
| 10 and Over | 6.6 | 7.4 | 7.3 | 7.1 |
| ALL | 9.8 | 10.7 | 10.4 | 10.3 |
| 1983 | | | | |
| Under 1 | 13.6 | 14.2 | 14.7 | 14.2 |
| 1 | 17.1 | 17.7 | 15.9 | 17.0 |
| 2 | 12.5 | 14.0 | 14.9 | 14.0 |
| 3 | 11.6 | 12.4 | 13.2 | 12.5 |
| 4 | 10.8 | 11.3 | 11.9 | 11.4 |
| 5 | 10.4 | 11.2 | 11.1 | 11.0 |
| 6 | 9.1 | 9.8 | 10.6 | 9.9 |
| 7 | 9.8 | 9.5 | 8.9 | 9.4 |
| 8 | 9.3 | 8.0 | 9.2 | 8.7 |
| 9 | 9.6 | 8.6 | 6.5 | 8.1 |
| 10 and Over | 7.1 | 7.1 | 6.5 | 6.9 |
| ALL | 10.1 | 10.8 | 10.2 | 10.4 |

*Includes only auto vehicles (standard auto, station wagon, taxi, and van-bus/minibus) owned by or available to the household on a regular basis, as defined by the 1969 NPTS Survey.

**ESTIMATED ANNUAL MILES PER VEHICLE:
TYPE OF VEHICLE,
PURCHASED NEW OR USED**

Interestingly, Table 4-23 reflects a change in driving patterns for vehicles purchased new versus those purchased used. While the average annual vehicle-miles for all vehicles increased less than 1 percent between 1977 and 1983, annual miles driven for vehicles purchased new decreased some 2 percent over the period while annual mileage on those purchased used increased almost 2 percent. The annual mileage increase on standard autos purchased used was 2.9 percent, while used pickup trucks with campers showed an increase of over 6 percent. Annual mileage decreased for both new and used other trucks, camper coaches, and mopeds.

**TABLE 4-23
ESTIMATED AVERAGE ANNUAL MILES PER VEHICLE* BY
VEHICLE TYPE AND WHETHER PURCHASED NEW OR USED**

| Vehicle Type | New | | Used | | All | |
|-----------------|--------|--------|--------|--------|--------|--------|
| | 1977 | 1983 | 1977 | 1983 | 1977 | 1983 |
| Standard Auto | 10,738 | 10,677 | 9,205 | 9,468 | 9,947 | 10,055 |
| Station Wagon | 11,778 | 11,699 | 10,222 | 10,194 | 10,989 | 10,879 |
| Vanbus/Minibus | 13,556 | 11,155 | 11,009 | 10,079 | 12,199 | 10,535 |
| Other Van | 16,131 | 10,305 | 10,335 | 10,375 | 12,775 | 10,349 |
| Pickup | 11,628 | 11,656 | 9,240 | 9,642 | 10,313 | 10,550 |
| Pickup w/Camper | 12,431 | 9,750 | 8,564 | 9,091 | 10,618 | 9,401 |
| Other Truck | 12,474 | 10,007 | 10,665 | 9,021 | 11,233 | 9,330 |
| Camper Coach | 7,493 | 3,613 | 7,788 | 4,851 | 7,638 | 4,485 |
| Motorcycles | 4,198 | 3,326 | 2,687 | 3,370 | 3,404 | 3,353 |
| Mopeds | 1,795 | 849 | 1,078 | 488 | 1,487 | 743 |
| Other | 8,224 | 7,290 | 7,938 | 6,280 | 8,027 | 6,546 |
| ALL | 10,859 | 10,641 | 9,186 | 9,336 | 9,857 | 9,951 |

*Includes only vehicles owned by the household through purchase by household members. Vehicles available on a regular basis through other means (company-owned, leased, rental, other) are not included in annual mileage estimates.

**ESTIMATED ANNUAL MILES PER AUTO:
AGE OF AUTO, PURCHASED NEW OR USED**

1983 data in Table 4-24 show that maximum usage (an average of 15,600 miles per year) of automobiles purchased used occurred when the vehicle was two years old. This reflects a change from 1977 and 1969 data which indicated that maximum use of automobiles purchased used took place in one-year-old vehicles.

The maximum usage (16,900 miles per year in 1983) of automobiles purchased new exceeded the maximum annual use for automobiles purchased used by 8 percent.

Although the data reflect only a slight change between 1977 and 1983 in annual average usage of new and used vehicles for the total household vehicle fleet, the newer vehicles in both purchase categories were used more extensively in 1983 than in 1977.

**TABLE 4-24
ESTIMATED AVERAGE ANNUAL MILES (THOUSANDS) PER
AUTOMOBILE* BY AUTO AGE AND WHETHER AUTOMOBILE
PURCHASED NEW OR USED**

| Auto Age (Years) | Auto Purchased | | |
|---------------------|----------------|------|------|
| | New | Used | All |
| 1969 | | | |
| Less than 1 | 18.0 | ** | 17.6 |
| 1 | 15.8 | 18.3 | 16.2 |
| 2 | 12.6 | 14.5 | 13.2 |
| 3 | 11.2 | 11.9 | 11.5 |
| 4 | 10.1 | 12.9 | 11.7 |
| 5 | 9.2 | 10.5 | 10.0 |
| 6 | 8.7 | 11.2 | 10.4 |
| 7 | 7.2 | 9.1 | 8.7 |
| 8 | 6.5 | 12.5 | 10.9 |
| 9 | ** | 7.9 | 8.0 |
| 10 or Over | 5.0 | 6.9 | 6.6 |
| ALL | 12.5 | 10.7 | 11.6 |
| 1977 | | | |
| Less than 1 | 12.8 | 7.9 | 12.8 |
| 1 | 13.2 | 11.5 | 13.1 |
| 2 | 13.1 | 11.1 | 12.7 |
| 3 | 12.2 | 10.8 | 11.7 |
| 4 | 11.3 | 11.2 | 11.2 |
| 5 | 10.2 | 10.9 | 10.5 |
| 6 | 9.7 | 11.1 | 10.5 |
| 7 | 9.2 | 9.7 | 9.5 |
| 8 | 8.1 | 9.0 | 8.7 |
| 9 | 8.2 | 9.1 | 8.9 |
| 10 or Over | 6.2 | 7.3 | 7.1 |
| ALL | 10.9 | 9.4 | 10.1 |
| 1983 | | | |
| Less than 1 | 13.8 | 14.5 | 13.8 |
| 1 | 16.9 | 14.4 | 16.5 |
| 2 | 12.8 | 15.6 | 13.5 |
| 3 | 11.6 | 12.8 | 12.0 |
| 4 | 10.5 | 12.0 | 11.1 |
| 5 | 10.3 | 11.5 | 10.8 |
| 6 | 9.2 | 10.3 | 9.9 |
| 7 | 8.5 | 9.8 | 9.3 |
| 8 | 7.4 | 9.0 | 8.6 |
| 9 | 6.7 | 8.7 | 8.1 |
| 10 or Over | 5.2 | 7.2 | 6.8 |
| ALL | 10.8 | 9.6 | 10.1 |

*Includes only auto vehicles (standard auto, station wagon, vanbus/minibus and personal use taxi) owned by the household through purchase by household members.

**Data not available.

5

VEHICLE TRIPS AND TRAVEL

INTRODUCTION

This chapter presents information on vehicle trips and vehicle miles of travel. It addresses the questions of:

- o purposes of trips,
- o when the trips are made,
- o the effect of income, place of residence, and vehicle ownership on travel behavior,
- o family life cycle impacts on travel, and
- o seasonal variation in travel.

Whenever it is possible, equivalent data on these characteristics have been compiled from the earlier (1969 and 1977) NPTS surveys, and assembled alongside the 1983 data to illustrate important trends in these factors. The relationships in this chapter are comparable to material presented in Report Nos. 3 and 9 in the 1977 NPTS report series and Report Nos. 3, 7, and 10 in the 1969 report series.

There were approximately 85 million households in the United States in 1983. Members of those households took nearly 127 billion vehicle trips amounting to more than 1 trillion vehicle miles of travel. The average length of those trips was 7.9 miles. In the years between 1969 and 1983 substantial changes occurred in U.S. vehicle travel. Travel associated with earning a living decreased while travel associated with family and personal business increased. Vehicle trips related to social and recreational activities increased while the vehicle miles of travel and average trip length associated with those activities decreased.

This chapter examines all vehicle trips to determine which households took them; why they took them; when they took them; and in a general sense, where they went.

Vehicle travel by household members is one of the basic measures of travel in transportation analysis. It indicates how households use private means of transportation. The Nationwide Personal Transportation Study defines a household as one or more people, related or not, living in the same housing unit. Vehicle travel consists of trips made in a private vehicle by a household driver, in contrast to person travel, which relates to all trips, by whatever means, taken by household members.

Vehicle travel is measured in three ways: vehicle trips, vehicle miles traveled and trip length. A vehicle trip occurs when one or more members of a household travel together in a private vehicle, and the driver is a household member. Vehicle miles of travel is measured by the distance one or more members of a household travel in a vehicle driven by a household driver. Trip length is determined by dividing the number of vehicle miles traveled by the number of vehicle trips.

| | SUMMARY OF NATIONAL ESTIMATES USED IN THIS CHAPTER (Thousands) | | |
|-------------------------|---|-------------|---------------|
| | 1969 | 1977 | 1983 |
| Households | 62,504 | 75,412 | 85,371 |
| Vehicle Trips | 87,284,000 | 108,826,000 | 126,874,000 |
| Vehicle Miles of Travel | 775,940,000 | 907,603,000 | 1,002,139,000 |

VEHICLE TRAVEL: PURPOSE

Each of the three measures of vehicle travel (vehicle trips, vehicle miles traveled, trip length) showed changes between 1969 and 1983. The proportion of travel related to earning a living dropped substantially between 1969 and 1983, while travel related to family and personal business increased (Table 5-1 and Figure 5-1).

Between 1969 and 1983, the average number of annual vehicle trips per household in the U.S. increased

almost 7 percent, from 1,396 to 1,486 (Table 5-2). A dramatic shift occurred in the purpose of vehicle trips. In 1969, more than one-third of all vehicle trips were related to earning a living (Table 5-1). By 1977, the proportion of vehicle trips related to earning a living was about evenly matched with that for trips related to family and personal business. In 1983, vehicle trips for family and personal business accounted for well over one-third

of vehicle trips, outstripping trips related to earning a living by almost 10 percentage points.

While trips related to earning a living decreased, substantial increases occurred in the frequency of vehicle trips related to family and personal business, from 31 percent in 1969 to 39.5 percent in 1983. The proportion of vehicle shopping trips increased by almost 5 percentage points during the 14-year period.

TABLE 5-1
DISTRIBUTION OF VEHICLE TRIPS,
VEHICLE MILES OF TRAVEL, AND AVERAGE TRIP LENGTH BY PURPOSE

| | Vehicle Trips | | | Vehicle Miles of Travel | | | Trip Length | | |
|--------------------------------------|---------------|-------|-------|-------------------------|-------|-------|-------------|------|-------|
| | 1969 | 1977 | 1983 | 1969 | 1977 | 1983 | 1969 | 1977 | 1983 |
| Earning a Living | | | | | | | | | |
| To or From Work | 31.9 | 29.3 | 27.8 | 33.6 | 31.7 | 30.1 | 9.4 | 9.1 | 8.5* |
| Work Related Business | 4.4 | 5.3 | 2.9 | 7.9 | 7.6 | 4.2 | 16.1 | 11.9 | 11.4 |
| Subtotal | 36.3 | 34.6 | 30.7 | 41.5 | 39.3 | 34.3 | 10.2 | 9.5 | 8.8 |
| Family and Personal Business | | | | | | | | | |
| Shopping | 15.3 | 18.6 | 20.0 | 7.5 | 11.1 | 13.4 | 4.4 | 5.0 | 5.3 |
| Doctor/Dentist | 1.7 | 1.5 | 1.2 | 1.6 | 1.8 | 1.5 | 8.4 | 10.3 | 9.7 |
| Other Family/Personal | 14.0 | 14.9 | 18.3 | 10.2 | 12.0 | 15.5 | 6.5 | 6.8 | 6.7 |
| Subtotal | 31.0 | 35.0 | 39.5 | 19.3 | 24.9 | 30.4 | 5.6 | 6.0 | 6.1 |
| Civic, Educational, and Religious | 9.3 | 7.3 | 5.9 | 4.9 | 5.2 | 4.1 | 4.7 | 5.9 | 5.5 |
| Social and Recreational | | | | | | | | | |
| Vacation | .0 | .1 | .2 | 2.6 | .6 | 2.1 | 160.0 | 77.9 | 113.9 |
| Visit Friends/Relatives | 9.0 | 9.3 | 9.9 | 12.1 | 12.1 | 13.5 | 12.0 | 10.9 | 10.8 |
| Pleasure Driving | 1.4 | .5 | .4 | 3.1 | .9 | 1.1 | 20.0 | 14.1 | 22.7 |
| Other Social/Recreational | 11.9 | 12.3 | 12.1 | 15.3 | 13.7 | 13.3 | 11.4 | 9.3 | 8.7 |
| Subtotal | 22.3 | 22.2 | 22.6 | 33.1 | 27.3 | 30.0 | 13.1 | 10.3 | 10.5 |
| Other | 1.1 | .9 | 1.3 | 1.2 | 3.3 | 1.2 | 9.4 | 29.3 | 7.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 8.9 | 8.4 | 7.9 |

*See Data Considerations for discussion of home-to-work trip length.

The proportion of annual vehicle trips related to social and recreational activities remained relatively unchanged from 1969 to 1983. However, the proportion of trips characterized as pleasure driving dropped from 1.4 percent to .4 percent.

As with vehicle trips, the proportion of vehicle miles of travel related to earning a living decreased from 41.5 percent to 34.3 percent between 1969 and 1983, and that related to family and personal business increased (19.3 percent to 30.4 percent). While the proportion of vehicle trips related to social and recreational activities remained relatively unchanged, the miles of travel related to those activities decreased from 33.1 percent to 30 percent.

The length of vehicle trips generally decreased, except in family and personal business and civic, educational, and religious travel which showed slight increases.

FIGURE 5-1
CHANGE IN DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE

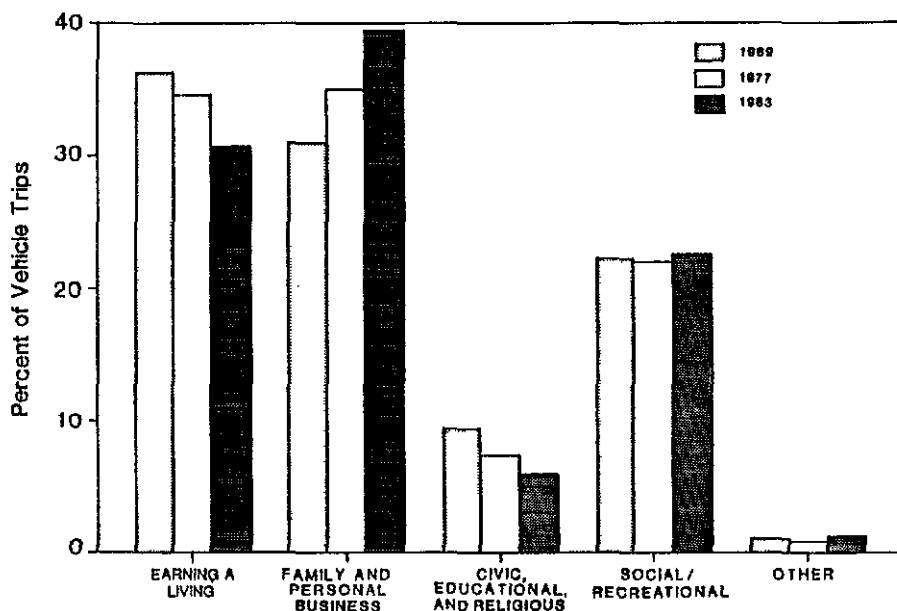


TABLE 5-2
ANNUAL VEHICLE TRIPS AND VEHICLE MILES OF TRAVEL
PER HOUSEHOLD BY PURPOSE

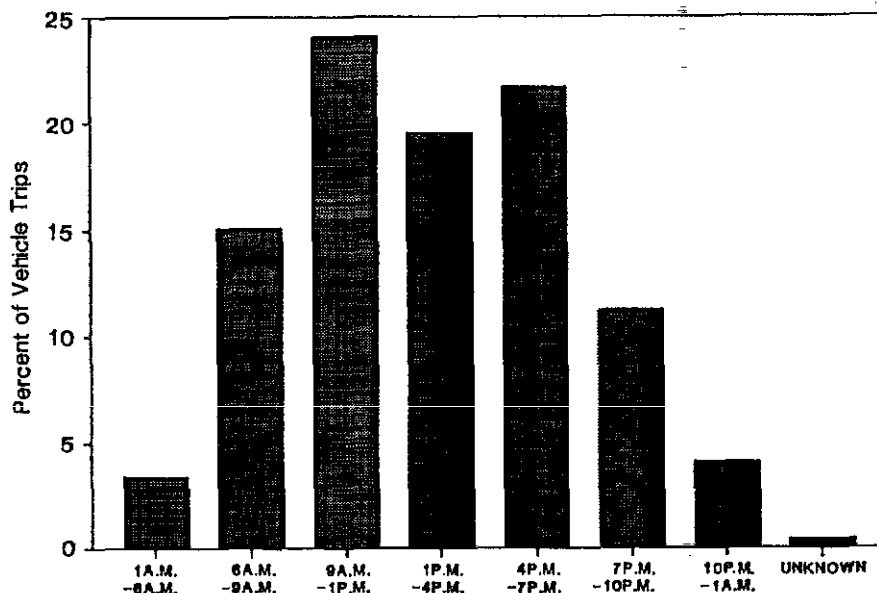
| | Vehicle Trips | | | Vehicle Miles of Travel | | |
|-----------------------------------|---------------|-------|-------|-------------------------|--------|--------|
| | 1969 | 1977 | 1983 | 1969 | 1977 | 1983 |
| Earning a Living | | | | | | |
| To Or From Work | 445 | 423 | 414 | 4,183 | 3,815 | 3,538 |
| Work Related Business | 62 | 76 | 43 | 986 | 915 | 495 |
| Subtotal | 507 | 499 | 457 | 5,169 | 4,730 | 4,033 |
| Family and Personal Business | | | | | | |
| Shopping | 213 | 268 | 297 | 929 | 1,336 | 1,567 |
| Doctor/Dentist | 24 | 22 | 18 | 204 | 217 | 172 |
| Other Family/Personal | 195 | 215 | 272 | 1,270 | 1,444 | 1,816 |
| Subtotal | 432 | 505 | 587 | 2,403 | 2,997 | 3,555 |
| Civic, Educational, and Religious | 130 | 105 | 88 | 608 | 626 | 481 |
| Social and Recreational | | | | | | |
| Vacation | 0 | 1 | 3 | 321 | 72 | 250 |
| Visit Friends/Relatives | 126 | 134 | 147 | 1,499 | 1,456 | 1,590 |
| Pleasure Driving | 20 | 7 | 6 | 382 | 108 | 132 |
| Other Social/Recreational | 166 | 178 | 179 | 1,892 | 1,650 | 1,562 |
| Subtotal | 312 | 320 | 335 | 4,094 | 3,286 | 3,534 |
| Other | 15 | 13 | 19 | 149 | 397 | 136 |
| TOTAL | 1,396 | 1,442 | 1,486 | 12,423 | 12,036 | 11,739 |

**VEHICLE TRAVEL: PURPOSE,
TIME OF DAY**

**FIGURE 5-2
DISTRIBUTION OF VEHICLE TRIPS BY TIME OF DAY
(1983)**

It is not surprising that vehicle trips tend to vary in purpose from one time of day to another. Most trips between 1 a.m. and 9 a.m. in 1983 were related to earning a living. Trips made between 9 a.m. and 7 p.m. were most frequently associated with family and personal business. Those taken between 7 p.m. and 1 a.m. were most often related to social and recreational activities (Table 5-3).

Most (65.6 percent) 1983 vehicle trips were made between 9 a.m. and 7 p.m., peaking between 9 a.m. and 1 p.m. and again between 4 p.m. and 7 p.m. (Figure 5-2). The smallest number (7.5 percent) of trips were made between 10 p.m. and 6 a.m. (Table 5-4). The largest percentages of trips associated with earning a living were clustered between 6 a.m. and 9 a.m. (30.9 percent) and 4 p.m. and 7 p.m. (23.8 percent).



**TABLE 5-3
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND TIME OF DAY
(WITHIN TIME PERIODS)
(1983)**

| | 1 a.m. to 6 a.m. | 6 a.m. to 9 a.m. | 9 a.m. to 1 p.m. | 1 p.m. to 4 p.m. | 4 p.m. to 7 p.m. | 7 p.m. to 10 p.m. | 10 p.m. to 1 a.m. | Unknown | All |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|---------|-------|
| Earning a Living | | | | | | | | | |
| To or From Work | 46.8 | 60.7 | 14.1 | 20.5 | 31.3 | 14.4 | 27.4 | 30.0 | 27.8 |
| Work Related Business | 2.6 | 2.3 | 4.1 | 3.6 | 2.2 | 2.0 | 1.7 | 3.8 | 2.9 |
| Subtotal | 49.4 | 63.0 | 18.2 | 24.1 | 33.5 | 16.4 | 29.1 | 33.8 | 30.7 |
| Family and Personal Business | | | | | | | | | |
| Shopping | 11.7 | 4.7 | 26.4 | 27.2 | 20.0 | 20.1 | 8.3 | 27.6 | 20.0 |
| Doctor/Dentist | 1.1 | .9 | 2.0 | 1.7 | .8 | .2 | .0 | .0 | 1.2 |
| Other Family/Personal | 10.9 | 14.1 | 24.7 | 21.6 | 16.8 | 12.4 | 10.0 | 22.9 | 18.3 |
| Subtotal | 23.7 | 19.7 | 53.1 | 50.5 | 37.6 | 32.7 | 18.3 | 50.5 | 39.5 |
| Civic, Educational, and Religious | 2.0 | 9.0 | 7.7 | 4.3 | 3.9 | 6.8 | 3.0 | 2.0 | 5.9 |
| Social and Recreational | | | | | | | | | |
| Vacation | .2 | .2 | .2 | .1 | .1 | .2 | .1 | .0 | .2 |
| Visit Friends/Relatives | 9.8 | 2.9 | 8.5 | 10.1 | 10.2 | 17.3 | 21.6 | 6.4 | 9.9 |
| Pleasure Driving | .0 | .1 | .1 | .6 | .5 | .6 | .4 | .7 | .4 |
| Other Social/Recreational | 13.4 | 3.8 | 10.8 | 8.9 | 13.0 | 24.8 | 27.0 | 5.2 | 12.1 |
| Subtotal | 23.4 | 7.0 | 19.6 | 19.7 | 23.8 | 42.9 | 49.1 | 12.3 | 22.6 |
| Other | 1.5 | 1.3 | 1.4 | 1.4 | 1.2 | 1.2 | .5 | 1.4 | 1.3 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TABLE 5-4
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND TIME OF DAY
(ACROSS TIME PERIODS)
(1983)

| | 1 a.m. to 6 a.m. | 6 a.m. to 9 a.m. | 9 a.m. to 1 p.m. | 1 p.m. to 4 p.m. | 4 p.m. to 7 p.m. | 7 p.m. to 10 p.m. | 10 p.m. to 1 a.m. | Unknown | All |
|--------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|---------|-------|
| Earning a Living | | | | | | | | | |
| To or From Work | 5.7 | 32.8 | 12.1 | 14.5 | 24.6 | 5.8 | 4.0 | .5 | 100.0 |
| Work Related Business | 3.0 | 11.7 | 34.1 | 24.3 | 16.3 | 7.7 | 2.3 | .6 | 100.0 |
| Subtotal | 5.4 | 30.9 | 14.2 | 15.4 | 23.8 | 6.0 | 3.8 | .5 | 100.0 |
| Family and Personal Business | | | | | | | | | |
| Shopping | 2.0 | 3.5 | 32.1 | 26.7 | 21.8 | 11.5 | 1.7 | .7 | 100.0 |
| Doctor/Dentist | 3.1 | 11.0 | 41.7 | 27.3 | 15.4 | 1.5 | .0 | .0 | 100.0 |
| Other Family/Personal | 2.0 | 11.6 | 32.9 | 23.1 | 20.0 | 7.6 | 2.2 | .6 | 100.0 |
| Subtotal | 2.0 | 7.5 | 32.8 | 25.1 | 20.7 | 9.4 | 1.9 | .6 | 100.0 |
| Civic, Educational, and Religious | 1.1 | 23.2 | 31.9 | 14.3 | 14.3 | 13.0 | 2.1 | .1 | 100.0 |
| Social and Recreational | | | | | | | | | |
| Vacation | 5.5 | 15.9 | 36.0 | 18.8 | 10.1 | 11.6 | 2.1 | .0 | 100.0 |
| Visit Friends/Relatives | 3.3 | 4.4 | 21.0 | 20.1 | 22.3 | 19.7 | 8.9 | .3 | 100.0 |
| Pleasure Driving | .0 | 3.3 | 18.3 | 31.4 | 26.4 | 16.0 | 3.7 | .9 | 100.0 |
| Other Social/Recreational | 3.7 | 4.7 | 21.6 | 14.4 | 23.5 | 22.9 | 9.0 | .2 | 100.0 |
| Subtotal | 3.5 | 4.6 | 21.4 | 17.2 | 22.9 | 21.3 | 8.8 | .3 | 100.0 |
| Other | 3.9 | 15.4 | 27.3 | 20.8 | 19.7 | 10.2 | 2.3 | .4 | 100.0 |
| ALL | 3.4 | 15.1 | 24.2 | 19.6 | 21.8 | 11.3 | 4.1 | .5 | 100.0 |

TABLE 5-5
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY PURPOSE AND TIME OF DAY
(ACROSS TIME PERIODS)
(1983)

| | 1 a.m. to 6 a.m. | 6 a.m. to 9 a.m. | 9 a.m. to 1 p.m. | 1 p.m. to 4 p.m. | 4 p.m. to 7 p.m. | 7 p.m. to 10 p.m. | 10 p.m. to 1 a.m. | Unknown | All |
|--------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|---------|-------|
| Earning a Living | | | | | | | | | |
| To or From Work | 8.3 | 34.5 | 9.1 | 12.9 | 24.9 | 5.8 | 4.0 | .5 | 100.0 |
| Work Related Business | 3.4 | 16.3 | 32.9 | 21.4 | 16.7 | 6.3 | 2.4 | .6 | 100.0 |
| Subtotal | 7.7 | 32.2 | 12.0 | 14.0 | 23.9 | 5.9 | 3.8 | .5 | 100.0 |
| Family and Personal Business | | | | | | | | | |
| Shopping | 1.9 | 4.5 | 28.8 | 29.9 | 23.0 | 9.4 | 1.6 | .9 | 100.0 |
| Doctor/Dentist | 1.8 | 11.4 | 45.2 | 26.2 | 14.4 | 1.0 | .0 | .0 | 100.0 |
| Other Family/Personal | 1.4 | 12.3 | 30.3 | 20.6 | 21.2 | 10.5 | 2.9 | .8 | 100.0 |
| Subtotal | 1.6 | 8.8 | 30.3 | 25.0 | 21.7 | 9.6 | 2.2 | .8 | 100.0 |
| Civic, Educational, and Religious | .6 | 23.4 | 26.8 | 15.2 | 16.2 | 14.1 | 2.0 | 1.7 | 100.0 |
| Social and Recreational | | | | | | | | | |
| Vacation | 1.6 | 25.1 | 54.4 | 8.7 | 4.4 | 5.8 | .0 | .0 | 100.0 |
| Visit Friends/Relatives | 7.4 | 7.6 | 19.2 | 22.1 | 21.2 | 15.7 | 6.7 | .1 | 100.0 |
| Pleasure Driving | .0 | 2.2 | 16.3 | 29.7 | 34.4 | 13.8 | 3.2 | .4 | 100.0 |
| Other Social/Recreational | 3.8 | 5.2 | 22.6 | 16.7 | 22.8 | 20.6 | 8.2 | .1 | 100.0 |
| Subtotal | 5.1 | 7.6 | 23.1 | 19.0 | 21.2 | 17.1 | 6.8 | .1 | 100.0 |
| Other | 3.6 | 16.4 | 37.7 | 12.6 | 20.6 | 6.3 | .9 | 1.9 | 100.0 |
| ALL | 4.8 | 17.2 | 21.8 | 18.9 | 21.9 | 10.7 | 4.1 | .6 | 100.0 |

Almost half of all vehicle miles of travel during 1983 occurred during the morning and afternoon periods of 9 a.m. to 1 p.m. and 4 p.m. to 7 p.m. (Table 5-5 and Figure 5-3).

Between 1 a.m. and 9 a.m. more than half of all vehicle miles were associated with earning a living. Between 9 a.m. and 4 p.m. most vehicle miles were related to family and personal business. Between 7 p.m. and 1 a.m. most vehicle miles of travel were associated with social and recreational activity (Table 5-6).

FIGURE 5-3
DISTRIBUTION OF VEHICLE MILES OF TRAVEL
BY TIME OF DAY
(1983)

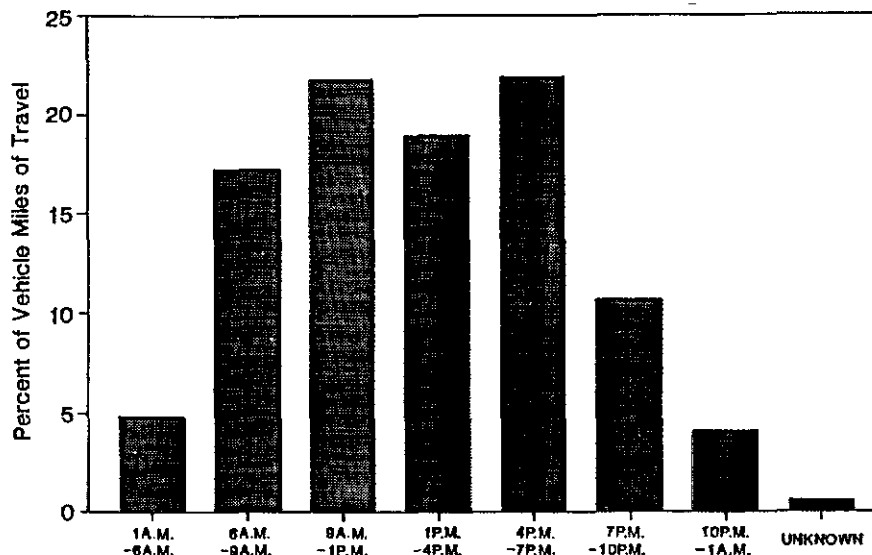


TABLE 5-6
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY PURPOSE AND TIME OF DAY
(WITHIN TIME PERIODS)
(1983)

| | 1 a.m. to 6 a.m. | 6 a.m. to 9 a.m. | 9 a.m. to 1 p.m. | 1 p.m. to 4 p.m. | 4 p.m. to 7 p.m. | 7 p.m. to 10 p.m. | 10 p.m. to 1 a.m. | Unknown | All |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|---------|-------|
| Earning a Living | | | | | | | | | |
| To or From Work | 52.6 | 60.4 | 12.6 | 20.6 | 33.9 | 16.4 | 29.6 | 28.8 | 30.1 |
| Work Related Business | 3.0 | 4.0 | 6.4 | 4.8 | 3.2 | 2.5 | 2.5 | 4.5 | 4.2 |
| Subtotal | 55.6 | 64.4 | 19.0 | 25.4 | 37.1 | 18.9 | 32.1 | 33.3 | 34.3 |
| Family and Personal Business | | | | | | | | | |
| Shopping | 5.3 | 3.5 | 17.6 | 21.1 | 13.9 | 11.8 | 5.3 | 21.6 | 13.4 |
| Doctor/Dentist | .6 | 1.0 | 3.0 | 2.0 | 1.0 | .1 | .0 | .0 | 1.5 |
| Other Family/Personal | 4.6 | 11.1 | 21.5 | 16.9 | 14.9 | 15.1 | 10.9 | 21.9 | 15.5 |
| Subtotal | 10.5 | 15.6 | 42.1 | 40.0 | 29.8 | 27.0 | 16.2 | 43.5 | 30.4 |
| Civic, Educational, and Religious | .5 | 5.6 | 5.0 | 3.3 | 3.0 | 5.4 | 2.0 | 12.3 | 4.1 |
| Social and Recreational | | | | | | | | | |
| Vacation | .7 | 3.1 | 5.3 | 1.0 | .4 | 1.2 | .0 | .0 | 2.1 |
| Visit Friends/Relatives | 21.1 | 6.0 | 12.0 | 15.9 | 13.0 | 19.9 | 22.2 | 3.5 | 13.5 |
| Pleasure Driving | .0 | .2 | .8 | 1.8 | 1.8 | 1.4 | .9 | .8 | 1.1 |
| Other Social/Recreational | 10.7 | 4.0 | 13.8 | 11.8 | 13.8 | 25.5 | 26.3 | 2.6 | 13.3 |
| Subtotal | 32.5 | 13.3 | 31.9 | 30.5 | 29.0 | 48.0 | 49.4 | 6.9 | 30.0 |
| Other | .9 | 1.1 | 2.0 | .8 | 1.1 | .7 | .3 | 4.0 | 1.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**VEHICLE TRAVEL: PURPOSE, TIME
OF WEEK***

The greatest proportion (42.8 percent) of daytime weekday (6:00 a.m. to 6:00 p.m., Monday through Friday) trips are associated with family and personal business, followed closely (38.4 percent) by trips related to earning a living (Table 5-7). Daytime trips on weekends are also most frequently (42.4 percent) for the purpose of family and personal business. Night time trips during the week and on weekends are primarily associated with social and recreational activities (36.1 and 47.7 percent, respectively).

**TABLE 5-7
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND TIME OF WEEK
(WITHIN TIME PERIODS)
(1983)**

| | <u>Weekday Day</u> | <u>Weekday Night</u> | <u>Weekend Day</u> | <u>Weekend Night</u> | <u>Unknown</u> | <u>All</u> |
|--------------------------------------|------------------------|--------------------------|------------------------|--------------------------|----------------|--------------|
| Earning a Living | | | | | | |
| To or From Work | 34.9 | 25.6 | 11.8 | 15.0 | 30.0 | 27.8 |
| Work Related Business | 3.5 | 2.1 | 2.2 | 2.0 | 3.8 | 2.9 |
| Subtotal | 38.4 | 27.7 | 14.0 | 17.0 | 33.8 | 30.7 |
| Family and Personal Business | | | | | | |
| Shopping | 19.0 | 15.7 | 27.5 | 19.7 | 27.6 | 20.0 |
| Doctor/Dentist | 1.8 | .4 | .3 | .3 | .0 | 1.2 |
| Other Family/Personal | 22.0 | 12.8 | 14.6 | 10.6 | 23.0 | 18.3 |
| Subtotal | 42.8 | 28.9 | 42.4 | 30.6 | 50.6 | 39.5 |
| Civic, Educational, and Religious | 4.6 | 6.2 | 10.9 | 3.5 | 1.6 | 5.9 |
| Social and Recreational | | | | | | |
| Vacation | .1 | .1 | .2 | .3 | .0 | .2 |
| Visit Friends/Relatives | 5.9 | 15.0 | 14.8 | 18.4 | 6.4 | 9.9 |
| Pleasure Driving | .2 | .5 | .9 | .3 | .7 | .4 |
| Other Social/Recreational | 6.7 | 20.5 | 15.5 | 28.7 | 5.2 | 12.1 |
| Subtotal | 12.9 | 36.1 | 31.4 | 47.7 | 12.3 | 22.6 |
| Other | 1.3 | 1.1 | 1.3 | 1.2 | .9 | 1.3 |
| Unknown | .0 | .0 | .0 | .0 | .8 | .0 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

*Weekday Day: 6:00 a.m. to 5:59 p.m., Monday through Friday.
 Weekday Night: 6:00 p.m. to 12:00 a.m., Sunday through
 Thursday; 12:00 a.m. to 5:59 a.m., Monday through Friday.
 Weekend Day: 6:00 a.m. to 5:59 p.m., Saturday and Sunday.
 Weekend Night: 6:00 p.m. to 12:00 a.m., Friday and Saturday;
 12:00 a.m. to 5:59 a.m., Saturday and Sunday.

Regardless of the purpose, more than half (57.7 percent) of all trips and more than half (54.4 percent) of the miles traveled occurred during the day on weekdays (Tables 5-8 and 5-9). This pattern is most clearly illustrated for vehicle miles of travel in Figure 5-4. The largest proportion of vehicle miles traveled during 1983 was related to earning a living (Table 5-10). During the day on weekdays, the greatest proportion of travel was related to earning a living, while the greatest proportions of travel during any other part of the week were associated with social and recreational activities.

FIGURE 5-4
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY TIME OF WEEK
(1983)

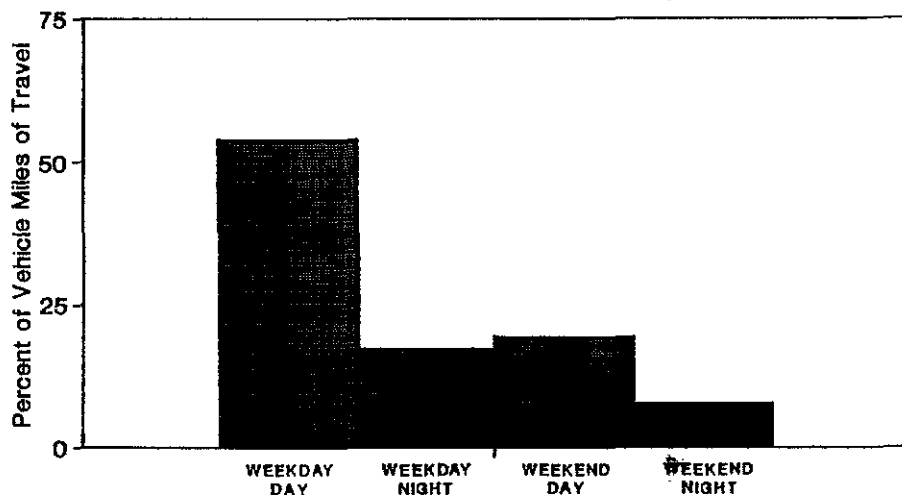


TABLE 5-8
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND TIME OF WEEK
(ACROSS TIME PERIODS)
(1983)

| | Weekday Day | Weekday Night | Weekend Day | Weekend Night | Unknown | Total |
|--------------------------------------|----------------|------------------|----------------|------------------|---------|-------|
| Earning a Living | | | | | | |
| To or From Work | 72.3 | 16.2 | 7.3 | 3.7 | .5 | 100.0 |
| Work Related Business | 69.2 | 12.5 | 13.0 | 4.7 | .6 | 100.0 |
| Subtotal | 72.0 | 15.9 | 7.8 | 3.8 | .5 | 100.0 |
| Family and Personal Business | | | | | | |
| Shopping | 54.9 | 13.9 | 23.8 | 6.7 | .7 | 100.0 |
| Doctor/Dentist | 87.7 | 6.5 | 4.1 | 1.7 | .0 | 100.0 |
| Other Family/Personal | 69.3 | 12.4 | 13.8 | 3.9 | .6 | 100.0 |
| Subtotal | 62.6 | 12.9 | 18.6 | 5.3 | .6 | 100.0 |
| Civic, Educational, and Religious | 45.0 | 18.6 | 32.2 | 4.1 | .1 | 100.0 |
| Social and Recreational | | | | | | |
| Vacation | 55.8 | 9.5 | 22.3 | 12.4 | .0 | 100.0 |
| Visit Friends/Relatives | 34.2 | 26.8 | 26.0 | 12.7 | .3 | 100.0 |
| Pleasure Driving | 30.5 | 22.3 | 40.7 | 5.6 | .0 | 100.0 |
| Other Social/Recreational | 31.9 | 29.8 | 22.0 | 16.1 | .2 | 100.0 |
| Subtotal | 33.0 | 28.2 | 24.1 | 14.4 | .3 | 100.0 |
| Other | 60.5 | 15.8 | 16.9 | 6.4 | .4 | 100.0 |
| ALL | 57.7 | 17.7 | 17.3 | 6.8 | .5 | 100.0 |

TABLE 5-9
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY PURPOSE AND TIME OF WEEK
(ACROSS TIME PERIODS)
(1983)

| | Weekday Day | Weekday Night | Weekend Day | Weekend Night | Unknown | Total |
|--------------------------------------|----------------|------------------|----------------|------------------|---------|-------|
| Earning a Living | | | | | | |
| To or From Work | 70.3 | 19.2 | 6.3 | 3.7 | .5 | 100.0 |
| Work Related Business | 67.7 | 12.4 | 15.0 | 4.3 | .6 | 100.0 |
| Subtotal | 70.0 | 18.3 | 7.4 | 3.8 | .5 | 100.0 |
| Family and Personal Business | | | | | | |
| Shopping | 55.9 | 10.3 | 25.0 | 7.9 | .9 | 100.0 |
| Doctor/Dentist | 87.8 | 4.9 | 5.9 | 1.4 | .0 | 100.0 |
| Other Family/Personal | 62.3 | 14.7 | 17.6 | 4.6 | .8 | 100.0 |
| Subtotal | 60.7 | 12.3 | 20.3 | 5.9 | .8 | 100.0 |
| Civic, Educational, and Religious | 42.3 | 19.4 | 33.6 | 3.0 | 1.7 | 100.0 |
| Social and Recreational | | | | | | |
| Vacation | 53.2 | 2.5 | 38.2 | 6.1 | .0 | 100.0 |
| Visit Friends/Relatives | 32.4 | 20.9 | 31.3 | 15.3 | .1 | 100.0 |
| Pleasure Driving | 23.1 | 29.4 | 43.0 | 4.1 | .4 | 100.0 |
| Other Social/Recreational | 28.1 | 25.1 | 29.1 | 17.6 | .1 | 100.0 |
| Subtotal | 31.8 | 21.8 | 31.2 | 15.1 | .1 | 100.0 |
| Other | 58.4 | 11.2 | 23.0 | 5.5 | 1.9 | 100.0 |
| ALL | 54.4 | 17.5 | 19.7 | 7.8 | .6 | 100.0 |

TABLE 5-10
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY PURPOSE AND TIME OF WEEK
(WITHIN TIME PERIODS)
(1983)

| | Weekday Day | Weekday Night | Weekend Day | Weekend Night | Unknown | Total |
|--------------------------------------|----------------|------------------|----------------|------------------|---------|-------|
| Earning a Living | | | | | | |
| To or From Work | 38.8 | 33.0 | 9.7 | 14.1 | 28.7 | 30.1 |
| Work Related Business | 5.2 | 3.0 | 3.2 | 2.3 | 4.5 | 4.2 |
| Subtotal | 44.0 | 36.0 | 12.9 | 16.4 | 33.2 | 34.3 |
| Family and Personal Business | | | | | | |
| Shopping | 13.7 | 7.8 | 16.9 | 13.5 | 21.6 | 13.4 |
| Doctor/Dentist | 2.4 | .4 | .4 | .3 | .0 | 1.5 |
| Other Family/Personal | 17.8 | 13.0 | 13.8 | 9.1 | 22.0 | 15.5 |
| Subtotal | 33.9 | 21.2 | 31.1 | 22.9 | 43.6 | 30.4 |
| Civic, Educational, and Religious | 3.2 | 4.5 | 7.0 | 1.6 | 12.3 | 4.1 |
| Social and Recreational | | | | | | |
| Vacation | 2.1 | .3 | 4.1 | 1.7 | .0 | 2.1 |
| Visit Friends/Relatives | 8.1 | 16.2 | 21.5 | 26.3 | 3.5 | 13.5 |
| Pleasure Driving | .5 | 1.9 | 2.4 | .6 | .8 | 1.1 |
| Other Social/Recreational | 6.9 | 19.2 | 19.6 | 29.6 | 2.6 | 13.3 |
| Subtotal | 17.6 | 37.6 | 47.6 | 58.2 | 6.9 | 30.0 |
| Other | 1.3 | .7 | 1.4 | .9 | 4.0 | 1.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

VEHICLE TRAVEL: HOUSEHOLD INCOME

While the overall average for annual miles of travel decreased slightly from 1977 to 1983, fairly substantial increases occurred in households with the lowest incomes (Table 5-11 and Figure 5-5). During that period, when average travel increased for households with earnings less than \$20,000, average travel decreased for households with incomes in excess of \$20,000.

FIGURE 5-5
PERCENT CHANGE (1977-1983)
IN ANNUAL VEHICLE MILES OF TRAVEL BY HOUSEHOLD INCOME
(1983 DOLLARS)

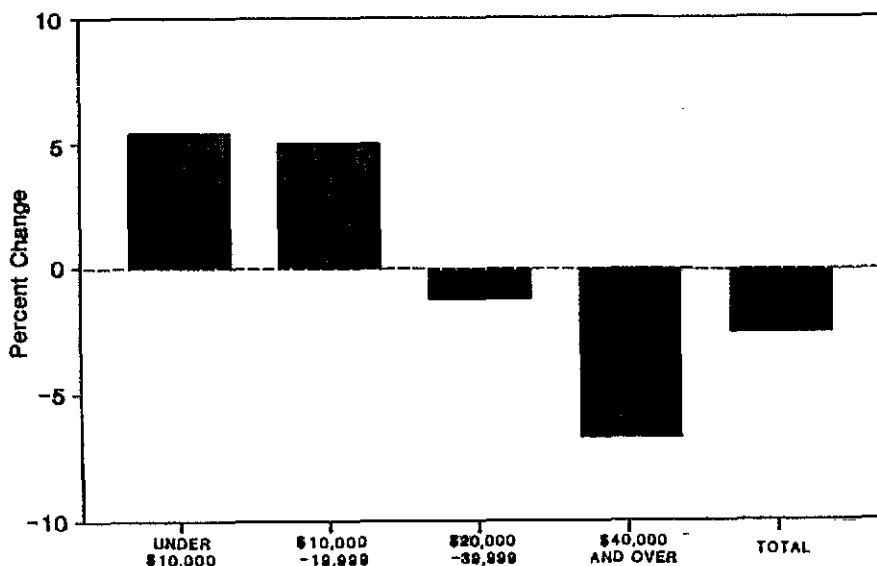


TABLE 5-11
ANNUAL VEHICLE MILES OF TRAVEL PER HOUSEHOLD BY
PURPOSE AND HOUSEHOLD INCOME
(1983 DOLLARS)

| | Under \$10,000 | \$10,000 - 19,999 | \$20,000 - 39,999 | \$40,000 and Over | Total |
|--------------------------------------|-------------------|----------------------|----------------------|----------------------|--------|
| 1977 | | | | | |
| Earning a Living | 1,209 | 3,733 | 6,492 | 8,157 | 4,730 |
| Family and Personal Business | 1,345 | 2,603 | 3,655 | 4,922 | 2,997 |
| Civic, Educational, and Religious | 265 | 545 | 740 | 1,125 | 626 |
| Social and Recreational | 1,518 | 2,815 | 3,963 | 5,405 | 3,286 |
| Other | 75 | 393 | 571 | 482 | 397 |
| TOTAL | 4,412 | 10,089 | 15,421 | 20,091 | 12,036 |
| Number of Households (000) | 18,800 | 19,426 | 27,791 | 9,395 | 75,412 |
| Percent of Households | 24.9 | 25.8 | 36.8 | 12.5 | 100.0 |
| 1983 | | | | | |
| Earning a Living | 1,168 | 3,330 | 5,677 | 6,832 | 4,033 |
| Family and Personal Business | 1,475 | 3,616 | 4,334 | 5,481 | 3,555 |
| Civic, Educational, and Religious | 205 | 382 | 549 | 1,014 | 481 |
| Social and Recreational | 1,689 | 3,171 | 4,548 | 5,255 | 3,534 |
| Other | 116 | 106 | 153 | 188 | 136 |
| TOTAL | 4,653 | 10,605 | 15,261 | 18,770 | 11,739 |
| Number of Households (000) | 22,350 | 22,760 | 28,132 | 12,129 | 85,371 |
| Percent of Households | 26.2 | 26.7 | 32.9 | 14.2 | 100.0 |

Regardless of household income, between 1977 and 1983 the proportion of vehicle miles of travel related to earning a living and civic, educational and religious activities dropped while mileage associated with family and personal business and social and recreational activities increased (Table 5-12). Households with incomes less than \$10,000 tended to devote the largest proportion of their travel to social and recreational activities, while those with greater incomes tended to devote a larger share of their travel to earning a living. That was true in 1977 and in 1983 except for a sizable shift to family and personal business travel among households with incomes between \$10,000 and \$20,000.

FIGURE 5-6
DISTRIBUTION OF 1977 VEHICLE TRIPS
BY PURPOSE WITHIN INCOME GROUPS
(1983 DOLLARS)

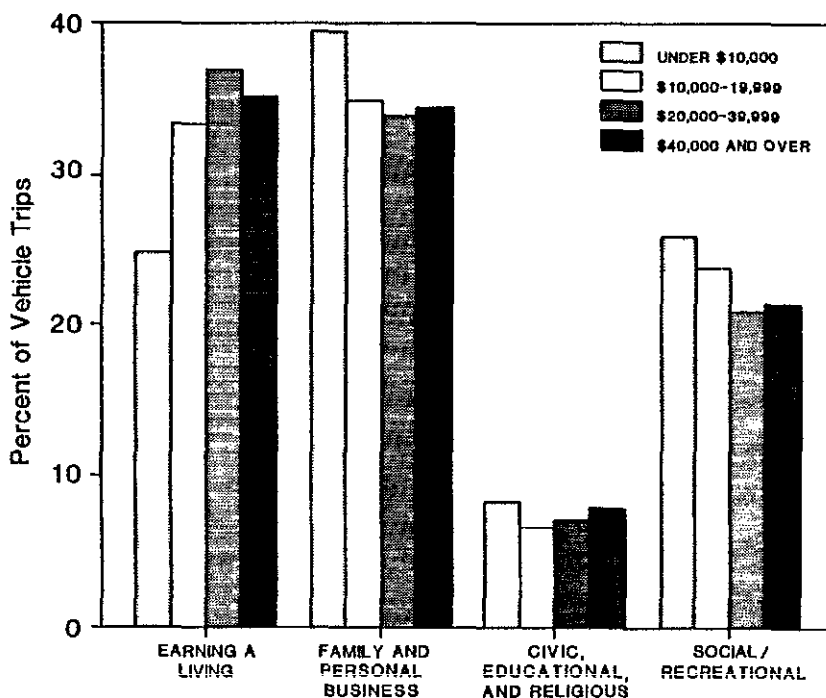


TABLE 5-12
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY
PURPOSE AND HOUSEHOLD INCOME
(1983 DOLLARS)

| | Under \$10,000 | \$10,000 - 19,999 | \$20,000 - 39,999 | \$40,000 and Over | Total |
|-----------------------------------|-------------------|----------------------|----------------------|----------------------|--------|
| 1977 | | | | | |
| Earning a Living | 27.4 | 37.0 | 42.1 | 40.6 | 39.3 |
| Family and Personal Business | 30.5 | 25.8 | 23.7 | 24.5 | 24.9 |
| Civic, Educational, and Religious | 6.0 | 5.4 | 4.8 | 5.6 | 5.2 |
| Social and Recreational | 34.4 | 27.9 | 25.7 | 26.9 | 27.3 |
| Other | 1.7 | 3.9 | 3.7 | 2.4 | 3.3 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Households (000) | 18,800 | 19,426 | 27,791 | 9,395 | 75,412 |
| Percent of Households | 24.9 | 25.8 | 36.8 | 12.5 | 100.0 |
| 1983 | | | | | |
| Earning a Living | 25.1 | 31.4 | 37.2 | 36.4 | 34.3 |
| Family and Personal Business | 31.7 | 34.1 | 28.4 | 29.2 | 30.4 |
| Civic, Educational, and Religious | 4.4 | 3.6 | 3.6 | 5.4 | 4.1 |
| Social and Recreational | 36.3 | 29.9 | 29.8 | 28.0 | 30.0 |
| Other | 2.5 | 1.0 | 1.0 | 1.0 | 1.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Households (000) | 22,350 | 22,760 | 28,132 | 12,129 | 85,371 |
| Percent of Households | 26.2 | 26.7 | 32.9 | 14.2 | 100.0 |

The average number of annual vehicle trips per household increased from 1,442 to 1,486 between 1977 and 1983 (Table 5-13). The increase was more pronounced among lower income households.

In 1977, households with incomes less than \$20,000, devoted the largest proportion of their vehicle trips to family and personal business. Those with greater incomes were devoting the largest proportion of their trips to earning a living (Table 5-14 and Figures 5-6 and 5-7). By 1983, all households, regardless of income, were devoting the greatest proportion of their vehicle trips to family and personal business.

FIGURE 5-7
DISTRIBUTION OF 1983 VEHICLE TRIPS
BY PURPOSE WITHIN INCOME GROUPS

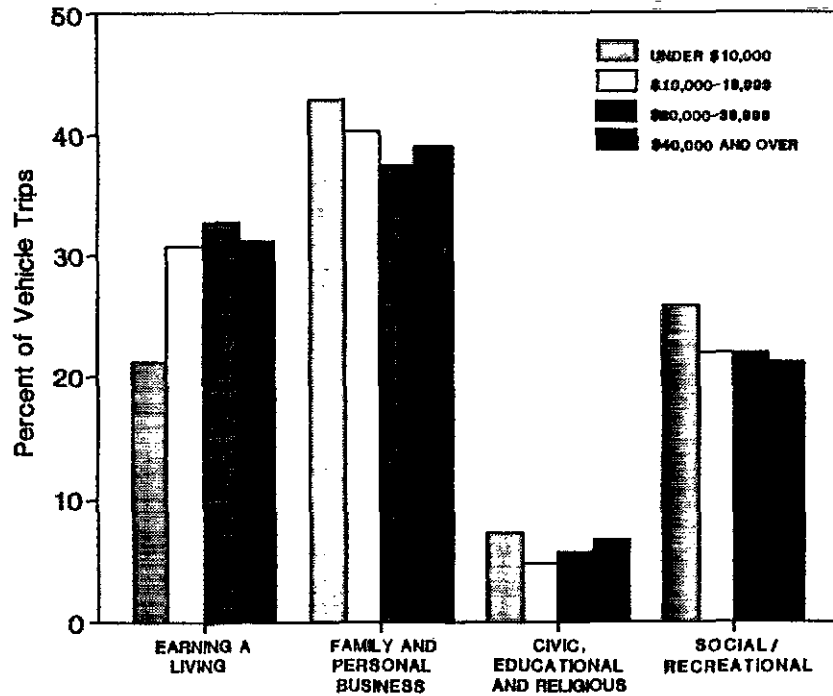


TABLE 5-13
ANNUAL VEHICLE TRIPS PER HOUSEHOLD BY PURPOSE AND HOUSEHOLD INCOME
(1983 DOLLARS)

| | Under \$10,000 | \$10,000 - 19,999 | \$20,000 - 39,999 | \$40,000 and Over | Total |
|-----------------------------------|-------------------|----------------------|----------------------|----------------------|--------|
| 1977 | | | | | |
| Earning a Living | 150 | 419 | 667 | 798 | 499 |
| Family and Personal Business | 238 | 438 | 613 | 783 | 505 |
| Civic, Educational, and Religious | 50 | 84 | 128 | 179 | 105 |
| Social and Recreational | 157 | 297 | 379 | 485 | 320 |
| Other | 6 | 10 | 16 | 23 | 13 |
| TOTAL | 601 | 1,248 | 1,803 | 2,268 | 1,442 |
| Number of Households (000) | 18,800 | 19,426 | 27,791 | 9,395 | 75,412 |
| Percent of Households | 24.9 | 25.8 | 36.8 | 12.5 | 100.0 |
| 1983 | | | | | |
| Earning a Living | 147 | 433 | 615 | 711 | 457 |
| Family and Personal Business | 295 | 565 | 704 | 890 | 587 |
| Civic, Educational, and Religious | 50 | 67 | 106 | 152 | 88 |
| Social and Recreational | 179 | 310 | 417 | 487 | 335 |
| Other | 8 | 17 | 26 | 25 | 19 |
| TOTAL | 679 | 1,392 | 1,868 | 2,265 | 1,486 |
| Number of Households (000) | 22,350 | 22,760 | 28,132 | 12,129 | 85,371 |
| Percent of Households | 26.2 | 26.7 | 32.9 | 14.2 | 100.0 |

TABLE 5-14
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND HOUSEHOLD INCOME
(1983 DOLLARS)

| | <u>Under</u> <u>\$10,000</u> | <u>\$10,000</u> <u>- 19,999</u> | <u>\$20,000</u> <u>- 39,999</u> | <u>\$40,000</u> <u>and Over</u> | <u>Total</u> |
|--------------------------------------|---------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------|
| 1977 | | | | | |
| Earning a Living | 25.0 | 33.6 | 37.0 | 35.2 | 34.6 |
| Family and Personal Business | 39.6 | 35.1 | 34.0 | 34.5 | 35.0 |
| Civic, Educational, and Religious | 8.3 | 6.7 | 7.1 | 7.9 | 7.3 |
| Social and Recreational | 26.1 | 23.8 | 21.0 | 21.4 | 22.2 |
| Other | 1.0 | .8 | .9 | 1.0 | .9 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Households (000) | 18,800 | 19,426 | 27,791 | 9,395 | 75,412 |
| Percent of Households | 24.9 | 25.8 | 36.8 | 12.5 | 100.0 |
| 1983 | | | | | |
| Earning a Living | 21.7 | 31.1 | 32.9 | 31.4 | 30.7 |
| Family and Personal Business | 43.4 | 40.6 | 37.7 | 39.3 | 39.5 |
| Civic, Educational, and Religious | 7.4 | 4.8 | 5.7 | 6.7 | 5.9 |
| Social and Recreational | 26.3 | 22.3 | 22.3 | 21.5 | 22.6 |
| Other | 1.2 | 1.2 | 1.4 | 1.1 | 1.3 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Households (000) | 22,350 | 22,760 | 28,132 | 12,129 | 85,371 |
| Percent of Households | 26.2 | 26.7 | 32.9 | 14.2 | 100.0 |

**VEHICLE TRAVEL: PURPOSE,
SMSA SIZE**

In 1983, the largest proportion of vehicle trips in SMSA's of all sizes were associated with family and personal business (Table 5-15). The proportion tended to be greater in larger SMSA's than in less populated SMSA's.

In SMSA's with populations larger than one million, the largest proportion of travel (VMT) was associated with earning a living. In areas with fewer than 250,000 and in those with between half and one million people, the largest proportion of travel was devoted to social and recreational activities.

The average trip length for all activities tended to increase gradually from 6.7 miles in SMSA's with fewer than 250,000 people to 8.4 miles for households in the largest SMSA's. The longest trip lengths were for social and recreational activities. Trip lengths related to earning a living increased steadily from 6.5 miles in the smallest SMSA's to 10.1 miles in the largest SMSA's. Overall, trip lengths associated with earning a living tended to be about 20 percent shorter than those associated with social and recreational activities.

**TABLE 5-15
DISTRIBUTION OF VEHICLE TRIPS, VEHICLE MILES OF TRAVEL, AND
AVERAGE TRIP LENGTH BY PURPOSE AND SMSA SIZE
(1983)**

| | <u>Under 250,000</u> | <u>250,000- 499,999</u> | <u>500,000- 999,999</u> | <u>1,000,000- 2,999,999</u> | <u>3,000,000 and over</u> | <u>All SMSA's</u> |
|--------------------------------------|--------------------------|-----------------------------|-----------------------------|---------------------------------|-------------------------------|-----------------------|
| Vehicle Trips | | | | | | |
| Earning a Living | 30.7 | 32.0 | 29.0 | 31.7 | 31.3 | 31.2 |
| Family and Personal Business | 36.4 | 38.4 | 42.7 | 39.1 | 40.3 | 39.2 |
| Civic, Educational, and Religious | 7.1 | 5.1 | 6.1 | 5.8 | 6.1 | 5.9 |
| Social and Recreational | 25.2 | 23.6 | 20.8 | 21.9 | 21.0 | 22.4 |
| Other | .6 | .9 | 1.4 | 1.5 | 1.3 | 1.3 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Vehicle Miles of Travel | | | | | | |
| Earning a Living | 29.7 | 34.6 | 33.5 | 38.9 | 37.8 | 35.6 |
| Family and Personal Business | 31.2 | 31.4 | 28.1 | 27.2 | 29.4 | 29.1 |
| Civic, Educational, and Religious | 3.9 | 3.6 | 3.9 | 4.1 | 3.9 | 3.9 |
| Social and Recreational | 34.8 | 29.7 | 33.9 | 28.0 | 28.2 | 30.4 |
| Other | .4 | .7 | .6 | 1.8 | .7 | 1.0 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Average Trip Length | | | | | | |
| Earning a Living | 6.5 | 7.7 | 8.9 | 9.8 | 10.1 | 8.8 |
| Family and Personal Business | 5.7 | 5.8 | 5.1 | 5.6 | 6.1 | 6.1 |
| Civic, Educational, and Religious | 3.6 | 5.1 | 4.9 | 5.7 | 5.3 | 5.5 |
| Social and Recreational | 9.2 | 8.9 | 12.6 | 10.2 | 11.2 | 10.5 |
| Other | 4.4 | 5.8 | 3.0 | 9.8 | 4.3 | 7.2 |
| ALL | 6.7 | 7.1 | 7.7 | 8.0 | 8.4 | 7.7 |

Households located outside central cities in SMSA's had the greatest number of average annual vehicle trips in 1983. Households in the central cities of SMSA's had the fewest trips and accumulated the least vehicle miles of travel (Table 5-16). Households outside SMSA's had the highest average number of vehicle miles of travel and the longest average trip lengths. The distribution of trips by purpose for households outside SMSA's closely resembled that of households within SMSA's in 1983 (Table 5-17). However, households in SMSA's especially those outside the central city, tended to devote a larger proportion of their vehicle miles of travel to earning a living than households outside SMSA's.

TABLE 5-16
ANNUAL VEHICLE TRIPS, VEHICLE MILES OF TRAVEL, AND
AVERAGE TRIP LENGTH PER HOUSEHOLD
BY PURPOSE AND PLACE OF RESIDENCE
(1983)

| | Outside SMSA | Inside SMSA | | | Total |
|--------------------------------------|-----------------|---------------------------|------------------------|----------|--------|
| | | Within Central City | Not in Central City | Subtotal | |
| Vehicle Trips | | | | | |
| Earning a Living | 465 | 376 | 513 | 455 | 457 |
| Family and Personal Business | 632 | 478 | 648 | 572 | 587 |
| Civic, Educational, and Religious | 90 | 71 | 91 | 86 | 88 |
| Social and Recreational | 362 | 284 | 353 | 327 | 335 |
| Other | 21 | 13 | 23 | 19 | 19 |
| TOTAL | 1,570 | 1,222 | 1,628 | 1,459 | 1,486 |
| Vehicle Miles of Travel | | | | | |
| Earning a Living | 4,205 | 2,894 | 4,906 | 3,978 | 4,033 |
| Family and Personal Business | 4,520 | 2,312 | 3,987 | 3,248 | 3,555 |
| Civic, Educational, and Religious | 611 | 351 | 497 | 438 | 481 |
| Social and Recreational | 3,992 | 2,476 | 3,916 | 3,389 | 3,534 |
| Other | 213 | 65 | 156 | 112 | 136 |
| TOTAL | 13,541 | 8,098 | 13,462 | 11,165 | 11,739 |
| Average Trip Length | | | | | |
| Earning a Living | 9.0 | 7.7 | 9.6 | 8.7 | 8.8 |
| Family and Personal Business | 7.2 | 4.8 | 6.2 | 5.7 | 6.1 |
| Civic, Educational, and Religious | 6.8 | 5.0 | 5.5 | 5.1 | 5.5 |
| Social and Recreational | 11.0 | 8.7 | 11.1 | 10.4 | 10.5 |
| Other | 10.0 | 5.0 | 6.7 | 6.1 | 7.2 |
| ALL | 8.6 | 6.6 | 8.3 | 7.7 | 7.9 |
| Number of Households (000) | 20,591 | 27,437 | 34,348 | 64,780 | 85,371 |

TABLE 5-17
DISTRIBUTION OF VEHICLE TRIPS, VEHICLE MILES OF TRAVEL
BY PURPOSE AND PLACE OF RESIDENCE
(1983)

| | Outside SMSA | Inside SMSA | | | Total |
|--------------------------------------|-----------------|---------------------------|------------------------|--------------|--------------|
| | | Within Central City | Not in Central City | Subtotal | |
| Vehicle Trips | | | | | |
| Earning a Living | 29.6 | 30.8 | 31.5 | 31.2 | 30.7 |
| Family and Personal Business | 40.2 | 39.1 | 39.8 | 39.2 | 39.5 |
| Civic, Educational, and Religious | 5.7 | 5.8 | 5.6 | 5.9 | 5.9 |
| Social and Recreational | 23.1 | 23.2 | 21.7 | 22.4 | 22.6 |
| Other | 1.4 | 1.1 | 1.4 | 1.3 | 1.3 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Vehicle Miles of Travel | | | | | |
| Earning a Living | 31.0 | 35.7 | 36.4 | 35.6 | 34.3 |
| Family and Personal Business | 33.4 | 28.6 | 29.6 | 29.1 | 30.4 |
| Civic, Educational, and Religious | 4.5 | 4.3 | 3.7 | 3.9 | 4.1 |
| Social and Recreational | 29.5 | 30.6 | 29.1 | 30.4 | 30.0 |
| Other | 1.6 | .8 | 1.2 | 1.0 | 1.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Households (000) | 20,591 | 27,437 | 34,348 | 64,780 | 85,371 |

VEHICLE TRAVEL: VEHICLE OWNERSHIP

Vehicle ownership changed dramatically between 1969 and 1983 (Table 5-18 and Figure 5-8). The number of one-vehicle households dropped while the number of two-vehicle households increased by more than 70 percent and the number of three-or-more vehicle households increased by 470 percent. In 1969, about half of all households had one vehicle (Table 5-19). Less than 5 percent had three or more vehicles. By 1983, about one-third of all households had only one vehicle and two-vehicle households had increased from 26.8 percent to 33.5 percent. While household vehicle ownership increased, trips and miles traveled between 1977 and 1983 appear to have remained fairly constant. In 1977 and 1983, the largest proportion of vehicle trips and vehicle miles of travel were made by two-vehicle households.

FIGURE 5-8
CHANGE IN NUMBER OF HOUSEHOLDS BY VEHICLE OWNERSHIP

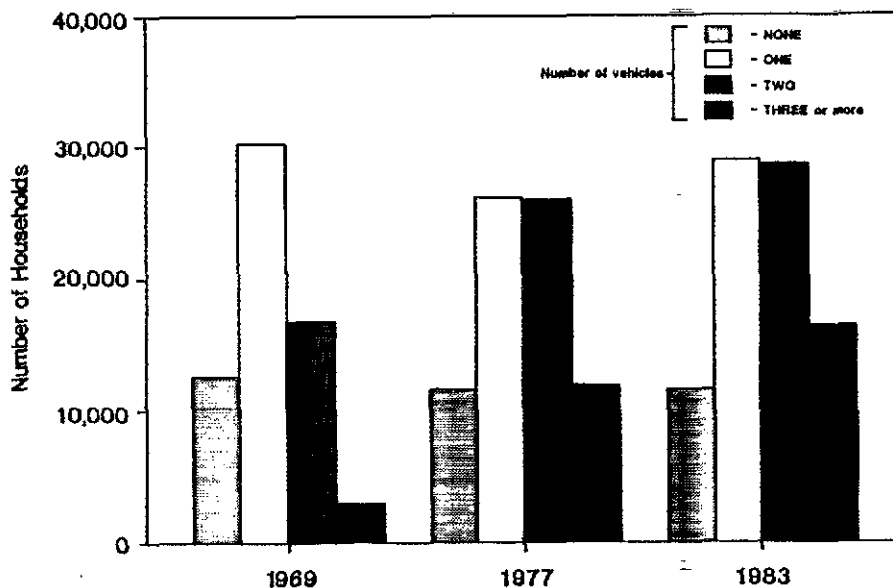


TABLE 5-18
ANNUAL VEHICLE TRIPS, VEHICLE MILES OF TRAVEL,
AND NUMBER OF HOUSEHOLDS BY VEHICLE OWNERSHIP

| <u>Number of Vehicles*</u> | <u>Households</u> | <u>Vehicle Trips</u> | <u>Vehicle Miles of Travel</u> |
|----------------------------|-------------------|----------------------|--------------------------------|
| 1969* | | | |
| None | 12,626 | N/A | N/A |
| One | 30,252 | N/A | N/A |
| Two | 16,751 | N/A | N/A |
| Three or More | 2,875 | N/A | N/A |
| TOTAL | 62,504 | 87,284,000 | 775,940,000 |
| 1977* | | | |
| None | 11,538 | 435,304 | 3,630,412 |
| One | 26,092 | 27,532,978 | 209,656,293 |
| Two | 25,942 | 49,189,352 | 414,774,571 |
| Three or More | 11,840 | 31,668,366 | 279,541,724 |
| TOTAL | 75,412 | 108,826,000 | 907,603,000 |
| 1983* | | | |
| None | 11,525 | 380,622 | 2,004,278 |
| One | 28,856 | 31,337,878 | 232,496,248 |
| Two | 28,599 | 53,287,080 | 422,902,658 |
| Three or More | 16,391 | 41,868,420 | 344,735,816 |
| TOTAL | 85,371 | 126,874,000 | 1,002,139,000 |

Note: All numbers are in thousands.

*1969 vehicles include autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

TABLE 5-19
DISTRIBUTION OF VEHICLE TRIPS, VEHICLE MILES OF TRAVEL,
AND NUMBER OF HOUSEHOLDS BY VEHICLE OWNERSHIP

| <u>Number of Vehicles*</u> | <u>Households</u> | <u>Vehicle Trips</u> | <u>Vehicle Miles of Travel</u> |
|----------------------------|-------------------|----------------------|--------------------------------|
| 1969 | | | |
| None | 20.2 | N/A | N/A |
| One | 48.4 | N/A | N/A |
| Two | 26.8 | N/A | N/A |
| Three or More | 4.6 | N/A | N/A |
| TOTAL | 100.0 | N/A | N/A |
| 1977 | | | |
| None | 15.3 | .4 | .4 |
| One | 34.6 | 25.3 | 23.1 |
| Two | 34.4 | 45.2 | 45.7 |
| Three or More | 15.7 | 29.1 | 30.8 |
| TOTAL | 100.0 | 100.0 | 100.0 |
| 1983 | | | |
| None | 13.5 | .3 | .2 |
| One | 33.8 | 24.7 | 23.2 |
| Two | 33.5 | 42.0 | 42.2 |
| Three or More | 19.2 | 33.0 | 34.4 |
| TOTAL | 100.0 | 100.0 | 100.0 |

*1969 vehicles include autos and passenger vans only, 1977 and 1983 vehicles also included pickup trucks, other trucks, etc. See section on Data Considerations for a more detailed explanation.

VEHICLE TRAVEL: PURPOSE,
FAMILY LIFE CYCLE

Overall the average number of annual vehicle trips increased between 1977 and 1983. In fact, the average number of trips for households of retired people increased by more than 30 percent (Table 5-20).

TABLE 5-20
ANNUAL VEHICLE TRIPS PER HOUSEHOLD BY PURPOSE AND FAMILY LIFE CYCLE

| | Single Adult No Children | Two Adults No Children | Single Adult Youngest Child Under 6 | Two Adults Youngest Child Under 6 | Single Adult Youngest Child 6-15 | Two Adults Youngest Child 6-15 |
|--------------------------------------|---|---|---|---|--|--------------------------------------|
| 1977 | | | | | | |
| Earning a Living | 220 | 578 | 193 | 629 | 351 | 747 |
| Family and Personal Business | 171 | 469 | 271 | 669 | 381 | 749 |
| Civic, Educational, and Religious | 32 | 82 | 49 | 111 | 85 | 200 |
| Social and Recreational | 155 | 323 | 151 | 386 | 255 | 452 |
| Other | 3 | 15 | 12 | 18 | 4 | 24 |
| TOTAL | 581 | 1,467 | 676 | 1,813 | 1,076 | 2,172 |
| 1983 | | | | | | |
| Earning a Living | 219 | 557 | 148 | 587 | 289 | 671 |
| Family and Personal Business | 234 | 573 | 347 | 782 | 489 | 922 |
| Civic, Educational, and Religious | 32 | 71 | 26 | 106 | 71 | 158 |
| Social and Recreational | 182 | 349 | 133 | 402 | 244 | 472 |
| Other | 6 | 20 | 10 | 17 | 11 | 36 |
| TOTAL | 673 | 1,570 | 664 | 1,894 | 1,104 | 2,259 |
| | Single Adult Youngest Child 16 or Older | Two Adults Youngest Child 16 or Older | Single Adult Retired No Children | Two Adults Retired No Children | All | |
| 1977 | | | | | | |
| Earning a Living | 416 | 946 | 7 | 110 | 499 | |
| Family and Personal Business | 417 | 791 | 186 | 456 | 505 | |
| Civic, Educational, and Religious | 187 | 240 | 18 | 69 | 105 | |
| Social and Recreational | 250 | 590 | 115 | 196 | 320 | |
| Other | 13 | 18 | 2 | 15 | 13 | |
| TOTAL | 1,283 | 2,585 | 328 | 846 | 1,442 | |
| 1983 | | | | | | |
| Earning a Living | 407 | 907 | 0 | 97 | 457 | |
| Family and Personal Business | 329 | 835 | 255 | 607 | 587 | |
| Civic, Educational, and Religious | 113 | 228 | 21 | 68 | 88 | |
| Social and Recreational | 417 | 563 | 157 | 293 | 335 | |
| Other | 5 | 28 | 7 | 28 | 19 | |
| TOTAL | 1,271 | 2,561 | 440 | 1,093 | 1,486 | |

Marital and employment status and whether or not children are part of a household, are all associated with substantial differences in the purpose of vehicle trips (Table 5-21). In 1977 and in 1983 about 70 percent of all trips were associated with earning a living or family and personal business. However, in households of retired people, one-quarter or more of the trips were devoted to social and recreational activities.

TABLE 5-21
DISTRIBUTION OF VEHICLE TRIPS BY PURPOSE AND FAMILY LIFE CYCLE

| | Single Adult No Children | Two Adults No Children | Single Adult Youngest Child Under 6 | Two Adults Youngest Child Under 6 | Single Adult Youngest Child 6-15 | Two Adults Youngest Child 6-15 |
|--------------------------------------|---|---|---|---|--|--------------------------------------|
| 1977 | | | | | | |
| Earning a Living | 37.9 | 39.4 | 28.6 | 34.7 | 32.6 | 34.4 |
| Family and Personal Business | 29.4 | 32.0 | 40.1 | 36.9 | 35.4 | 34.5 |
| Civic, Educational, and Religious | 5.5 | 5.6 | 7.2 | 6.1 | 7.9 | 9.2 |
| Social and Recreational | 26.7 | 22.0 | 22.3 | 21.3 | 23.7 | 20.8 |
| Other | .5 | 1.0 | 1.8 | 1.0 | .4 | 1.1 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1983 | | | | | | |
| Earning a Living | 32.6 | 35.5 | 22.3 | 31.0 | 26.2 | 29.7 |
| Family and Personal Business | 34.8 | 36.5 | 52.3 | 41.3 | 44.3 | 40.8 |
| Civic, Educational, and Religious | 4.7 | 4.5 | 3.9 | 5.6 | 6.4 | 7.0 |
| Social and Recreational | 27.0 | 22.2 | 20.0 | 21.2 | 22.1 | 20.9 |
| Other | .9 | 1.3 | 1.5 | .9 | 1.0 | 1.6 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | Single Adult Youngest Child 16 or Older | Two Adults Youngest Child 16 or Older | Single Adult Retired No Children | Two Adults Retired No Children | All | |
| 1977 | | | | | | |
| Earning a Living | 32.4 | 36.6 | 2.2 | 13.0 | 34.6 | |
| Family and Personal Business | 32.5 | 30.6 | 56.8 | 53.9 | 35.0 | |
| Civic, Educational, and Religious | 14.6 | 9.3 | 5.5 | 8.1 | 7.3 | |
| Social and Recreational | 19.5 | 22.8 | 35.0 | 23.2 | 22.2 | |
| Other | 1.0 | .7 | .5 | 1.8 | .9 | |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| 1983 | | | | | | |
| Earning a Living | 32.0 | 35.4 | .0 | 8.9 | 30.7 | |
| Family and Personal Business | 25.9 | 32.6 | 58.0 | 55.5 | 39.5 | |
| Civic, Educational, and Religious | 8.9 | 8.9 | 4.7 | 6.2 | 5.9 | |
| Social and Recreational | 32.8 | 22.0 | 35.7 | 26.8 | 22.6 | |
| Other | .4 | 1.1 | 1.6 | 2.6 | 1.3 | |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |

Between 1977 and 1983, the proportion of trips related to earning a living dropped substantially for all groups.

In 1977, the largest proportion of travel in all households except those with retired people was devoted to earning a living (Table 5-22). By 1983, although the proportion of travel associated

with earning a living had decreased for every group, only households with two adults devoted the largest proportion of their travel to earning a living. Households with single adults, whether or not there were children, devoted the largest proportion of their travel to social and recreational activities.

TABLE 5-22
DISTRIBUTION OF VEHICLE MILES OF TRAVEL BY PURPOSE AND FAMILY LIFE CYCLE

| | Single Adult No Children | Two Adults No Children | Single Adult Youngest Child Under 6 | Two Adults Youngest Child Under 6 | Single Adult Youngest Child 6-15 | Two Adults Youngest Child 6-15 |
|--------------------------------------|---|---|---|---|--|--------------------------------------|
| 1977 | | | | | | |
| Earning a Living | 41.4 | 40.5 | 35.8 | 42.6 | 40.5 | 40.4 |
| Family and Personal Business | 20.5 | 22.0 | 31.8 | 25.9 | 25.1 | 25.5 |
| Civic, Educational, and Religious | 3.8 | 4.2 | 5.7 | 4.2 | 6.4 | 6.4 |
| Social and Recreational | 32.8 | 28.1 | 25.7 | 25.0 | 27.4 | 25.2 |
| Other | 1.5 | 5.2 | 1.0 | 2.3 | .6 | 2.5 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1983 | | | | | | |
| Earning a Living | 30.3 | 35.1 | 19.1 | 40.4 | 29.2 | 35.0 |
| Family and Personal Business | 25.0 | 30.8 | 31.7 | 28.3 | 32.5 | 32.2 |
| Civic, Educational, and Religious | 3.0 | 2.5 | 2.2 | 3.9 | 4.3 | 4.8 |
| Social and Recreational | 41.0 | 30.0 | 42.5 | 26.6 | 33.6 | 26.9 |
| Other | .7 | 1.6 | 4.5 | .8 | .4 | 1.1 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | Single Adult Youngest Child 16 or Older | Two Adults Youngest Child 16 or Older | Single Adult Retired No Children | Two Adults Retired No Children | All | |
| 1977 | | | | | | |
| Earning a Living | 37.2 | 39.6 | 2.1 | 14.1 | 39.3 | |
| Family and Personal Business | 22.2 | 23.0 | 39.3 | 42.1 | 24.9 | |
| Civic, Educational, and Religious | 9.2 | 7.1 | 4.7 | 5.7 | 5.2 | |
| Social and Recreational | 27.6 | 27.2 | 53.6 | 31.4 | 27.3 | |
| Other | 3.8 | 3.1 | .3 | 6.7 | 3.3 | |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| 1983 | | | | | | |
| Earning a Living | 28.9 | 36.1 | .0 | 9.9 | 34.3 | |
| Family and Personal Business | 28.3 | 26.5 | 54.1 | 44.4 | 30.4 | |
| Civic, Educational, and Religious | 5.7 | 8.1 | 3.1 | 6.8 | 4.1 | |
| Social and Recreational | 37.0 | 28.4 | 41.4 | 37.2 | 30.0 | |
| Other | .1 | .9 | 1.4 | 1.7 | 1.2 | |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |

As can be seen in Table 5-22, the presence of children increased the proportion of vehicle miles of travel for family and personal business and civic, educational, and religious purposes. Only households of retired persons have higher proportions of travel for family and personal business purposes, and the frequency of travel associated with earning a living is very low in these households.

In 1983, two-adult households with older children had the highest annual vehicle miles of travel (Table 5-23). Except in households with young children, all two-adult household categories showed a decrease between 1977 and 1983 in average annual miles of travel. The largest increases took place in single-adult households with no children, with youngest child under 6, and with youngest child 16 or older.

TABLE 5-23
ANNUAL VEHICLE MILES OF TRAVEL PER HOUSEHOLD
BY PURPOSE AND FAMILY LIFE CYCLE

| | Single Adult No Children | Two Adults No Children | Single Adult Youngest Child Under 6 | Two Adults Youngest Child Under 6 | Single Adult Youngest Child 6-15 | Two Adults Youngest Child 6-15 |
|-----------------------------------|---|---|---|---|--|--------------------------------------|
| 1977 | | | | | | |
| Earning a Living | 2,004 | 5,399 | 1,532 | 6,543 | 2,676 | 7,151 |
| Family and Personal Business | 992 | 2,933 | 1,361 | 3,978 | 1,659 | 4,514 |
| Civic, Educational, and Religious | 184 | 560 | 244 | 645 | 423 | 1,133 |
| Social and Recreational | 1,588 | 3,746 | 1,100 | 3,840 | 1,811 | 4,461 |
| Other | 73 | 693 | 43 | 353 | 40 | 443 |
| TOTAL | 4,841 | 13,331 | 4,280 | 15,359 | 6,609 | 17,702 |
| 1983 | | | | | | |
| Earning a Living | 1,698 | 4,669 | 965 | 6,276 | 1,870 | 6,084 |
| Family and Personal Business | 1,401 | 4,097 | 1,602 | 4,396 | 2,081 | 5,597 |
| Civic, Educational, and Religious | 168 | 333 | 111 | 606 | 275 | 834 |
| Social and Recreational | 2,298 | 3,991 | 2,148 | 4,132 | 2,152 | 4,676 |
| Other | 39 | 213 | 227 | 124 | 26 | 191 |
| TOTAL | 5,604 | 13,303 | 5,053 | 15,534 | 6,404 | 17,382 |
| | Single Adult Youngest Child 16 or Older | Two Adults Youngest Child 16 or Older | Single Adult Retired No Children | Two Adults Retired No Children | All | |
| 1977 | | | | | | |
| Earning a Living | 3,876 | 8,725 | 40 | 907 | 4,730 | |
| Family and Personal Business | 2,313 | 5,067 | 744 | 2,709 | 2,997 | |
| Civic, Educational, and Religious | 958 | 1,564 | 89 | 367 | 626 | |
| Social and Recreational | 2,875 | 5,993 | 1,016 | 2,021 | 3,286 | |
| Other | 396 | 683 | 6 | 431 | 397 | |
| TOTAL | 10,418 | 22,032 | 1,895 | 6,435 | 12,036 | |
| 1983 | | | | | | |
| Earning a Living | 3,084 | 7,317 | 0 | 602 | 4,033 | |
| Family and Personal Business | 3,020 | 5,371 | 1,156 | 2,701 | 3,555 | |
| Civic, Educational, and Religious | 608 | 1,642 | 66 | 414 | 481 | |
| Social and Recreational | 3,948 | 5,757 | 885 | 2,263 | 3,534 | |
| Other | 11 | 182 | 30 | 103 | 136 | |
| TOTAL | 10,671 | 20,269 | 2,137 | 6,083 | 11,739 | |

VEHICLE TRAVEL: SEASONAL

Slight seasonal* shifts occurred in travel patterns between 1969 and 1983 (Table 5-24 and Figure 5-9). The shifts were consistent for both vehicle trips and vehicle miles of travel. In 1969, most travel occurred during the winter and spring months. During 1977, most travel occurred during spring and summer months. In 1983, the largest amount of travel occurred during spring and fall months.

*Winter: January - March
 Spring: April - June
 Summer: July - September
 Fall: October - December

FIGURE 5-9

CHANGE IN DISTRIBUTION OF VEHICLE TRIPS BY SEASON

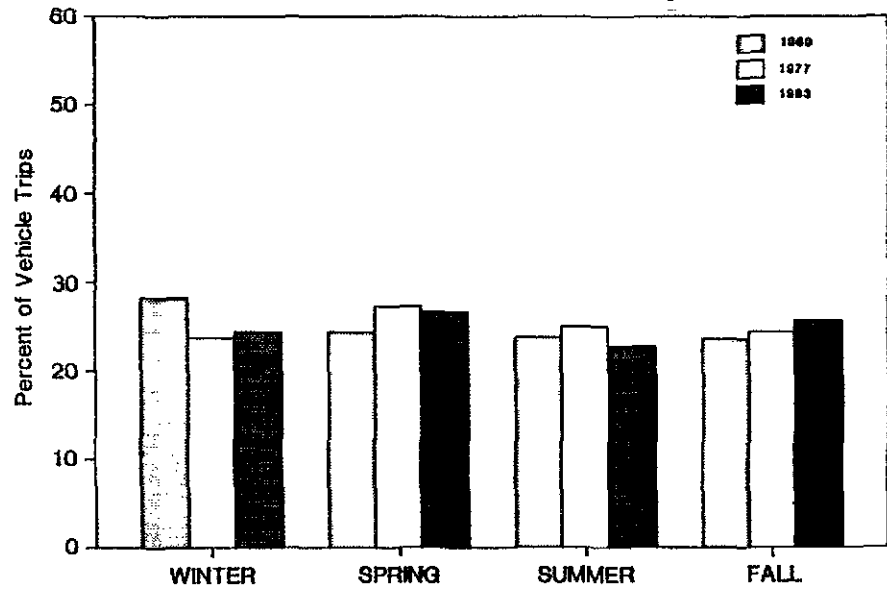


TABLE 5-24
 DISTRIBUTION OF VEHICLE TRIPS
 AND VEHICLE MILES OF TRAVEL BY SEASON

| Season | Vehicle Trips | | | Vehicle Miles of Travel | | |
|--------|---------------|-------|-------|-------------------------|-------|-------|
| | 1969 | 1977 | 1983 | 1969 | 1977 | 1983 |
| Winter | 28.3 | 23.6 | 24.5 | 26.9 | 22.9 | 22.8 |
| Spring | 24.4 | 27.2 | 26.9 | 27.3 | 25.8 | 28.1 |
| Summer | 23.8 | 24.9 | 22.7 | 23.0 | 27.3 | 24.1 |
| Fall | 23.5 | 24.3 | 25.9 | 22.8 | 24.0 | 25.0 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |