



U.S. Department
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1990 NPTS

NATIONWIDE
PERSONAL
TRANSPORTATION
SURVEY

URBAN TRAVEL
PATTERNS

1990 NPTS Publications Series:

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

Summary of Travel Trends

Travel Behavior Issues in the 90's

1990 NPTS Databook

NPTS Urban Travel Patterns

NPTS Special Subject Reports

Abbreviations used in this report:

MSA--metropolitan statistical area

NPTS--Nationwide Personal Transportation Survey

PMT--person miles of travel

POV--personally operated vehicle/privately owned vehicle

VMT--vehicle miles of travel

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16. Abstract This is one of a series of reports on the 1990 Nationwide Personal Transportation Survey (NPTS). The NPTS includes information about the amount and nature of personal travel in the United States, as related to the demographics of persons and households. This report focuses on analyses of four urban size groups: urbanized areas under 1 million population, urbanized areas with 1 million or more population without rail, urbanized areas with 1 million or more population with rail, and non-urbanized areas. Topics include person and vehicle trip rates, vehicle occupancy rates, trip length in time and distance, mode choice, and commuting trip patterns. Comparisons of the 1983 and 1990 NPTS datasets are included.			
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**U.S. Department of Transportation
Federal Highway Administration**

NPTS Urban Travel Patterns

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

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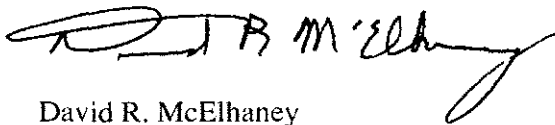
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Foreword

Because more than 60 percent of the U. S. population lives in urbanized areas, and 54 percent of the Nation's highway travel occurs in urbanized areas, it is important to understand travel characteristics in these areas. Not only are these urbanized areas centers of population, but also they are centers of education, culture, sporting events, and special services such as health care. In addition, many are centers of traffic congestion, air pollution, and aging infrastructures. Even within urbanized areas there are travel differences between the older central cities, post-war suburbs, and newly developing suburbs. Similarly, the travel demands in non-urban areas must be examined and understood so that we can plan our future. This report examines and documents travel behavior in various urbanized area size groups, using data from the Nationwide Personal Transportation Survey (NPTS).

NPTS is one source of data to help planners and decision makers understand current travel patterns and to examine historic trends. In 1995, the next NPTS will be conducted, adding to the series of data points from 1969, 1977, 1983, and 1990.

This report is part of the NPTS report series, documenting and exploring the nature of travel in our complex society.



David R. McElhaney
Director, Office of Highway Information Management

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Introduction

This report focuses on urban transportation and the needs of urban transportation planners and metropolitan planning officials. Although the report is nationwide in scope, it is designed to provide a basis for judging the trip-making and travel implications associated with individual urban area demographic and socioeconomic changes. Accordingly, the information should be of special importance to engineers, economists, and planners who are responsible for developing the models needed to forecast urban area and corridor transportation demand.

This report centers on trips of 75 miles or less to provide greater comparability with regional household travel surveys. To show important urban trip-making trends, 1983 and 1990 NPTS findings are compared.

Overall Findings

The 1990 NPTS reveals that important trip-making changes occurred from 1983 to 1990. First, and perhaps most importantly, trips for family and personal business, other than shopping, overtook commuting trips as the predominant type of trip, when examining all trips of 75 miles or less on all days. Nevertheless, commuting vehicle miles of travel (VMT) still prevails as the most significant element of household VMT.

Second, although the average trip to and from work lengthened in distance and duration, the increase in commute trip length far outpaced the increase in commute duration. Therefore, it may be concluded that the average commute trip speed increased from 1983 to 1990.

Third, the average commute trip in 1990 was just over 10 miles, and took only 19 minutes to accomplish.

Fourth, short commuting trips of 1 mile or less decreased from 1983 to 1990, while commuting trips of more than 8 miles increased. Commuting trips of more than 8 miles in privately operated vehicles accounted for more than 80 percent of commuting VMT.

Fifth, the average occupancy rate for privately operated vehicles decreased from 1983 to 1990, and the greatest decrease — from 1.18 to 1.12 persons per vehicle — was for trips to and from work.

Sixth, in 1990, on average, households in large urban areas with rail/subway made fewer daily trips in privately operated vehicles (POVs) than households in similarly sized areas without rail/subway service.

Report Organization

The information is presented in seven chapters. Chapter 1, "Person and Vehicle Trip Rates," describes the average daily person and vehicle

trip rates for households by characteristics such as household size, household income, and number of vehicles. Person trip summaries are also included.

Chapter 2, "Vehicle Miles of Travel (VMT)," explores the vehicle miles of travel associated with characteristics such as trip purpose, household income, and vehicle availability.

Chapter 3, "Trip Length in Distance and Time," describes both the average length and duration of trips by trip purpose, travel mode, and gender.

Chapter 4, "Mode Choice," describes the variations in travel modes with particular emphasis on trips to and from work.

Chapter 5, "Occupancy of Privately Operated Vehicles," describes the average occupancy rates for trips by purpose and distance.

Chapter 6, "Geographic Regions and Individual Metropolitan Areas," analyzes the trip-making characteristics of persons living inside and outside the central cities of urbanized areas. It also describes trip characteristics of 12 major metropolitan areas.

Chapter 7, "Commute Trips by Time of Day," examines time patterns by travel mode and gender, especially peak travel patterns.

Key Terms

A few basic terms and concepts are discussed in the following sections to help readers use and understand the tables in this report.

Urban Size Groups

For this report, each NPTS household has been categorized based on residence location in one of four urban size groups. The tables show the travel by residents of these four urban size groups, but the tables do not necessarily indicate where the travel by these households occurred. These groups are based on population and the presence or absence of rail/subway service in the urbanized area. Urbanized area is a Bureau of the Census term defined by total population, presence of a central city, and population density. There must be a total population of 50,000 or more, and population density must exceed 1,000 people per square mile. An urbanized area can be parts of counties, unlike metropolitan areas, which are defined by county boundaries. Small urban areas are smaller centers of population.

The four groups follow:

Under 1 Million—population of urbanized areas between 50,000 and 999,999. These areas generally do not have rail or subway service, but may have local bus service.

1+ Million without Rail—population of urbanized areas more than 1 million, but without rail or subway service. For example, Los Angeles is in this classification because the rail/subway service was not fully developed at the time of the survey.

1+ Million with Rail—population of urbanized areas more than 1 million, and with rail and/or subway service. This includes areas of both old and new rail and/or subway service such as New York, Chicago, Philadelphia, Boston, San Francisco, and Atlanta.

Not Urban—rural areas and small centers not in an urbanized area.

Some of the tables in this report show the total for urbanized areas. For this total, the three categories: Under 1 million, 1+ Million without rail, and 1+ Million with rail are summed.

Metropolitan Area—Metropolitan areas are defined by the Office of Management and Budget, using county boundaries. (In New England, city and town boundaries are used.) By current standards, an area qualifies for recognition as a metropolitan area if there is a city of at least 50,000 population, or a Bureau of the Census defined urbanized area of at least 100,000 (75,000 in New England). In addition to the county containing the main city, additional counties are included if they are socially and economically integrated with the central county.

Note that urbanized areas are contained within metropolitan areas. However, because metropolitan areas include entire counties, a significant portion of their land area is rural.

Person Trip—A person trip is a trip by one person by any mode of transportation. Unless otherwise specified, the tables on person trips contain travel data collected in the NPTS by *all* modes (private vehicle, public transportation, walking, bicycle, etc.). A person trip is counted regardless of whether the person is a driver or a passenger. Two people traveling together in one car are counted as 2 person trips.

Person Miles—Person miles are the number of miles traveled by each person on a trip. A 3 mile vehicle trip made by two people traveling together would count as 6 person miles.

Vehicle Trip—A vehicle trip is a trip by a single privately operated vehicle (POV), regardless of the number of persons in the vehicle. The trip defined above (two people travelling together in one vehicle) would be considered 1 vehicle trip. To be counted as a vehicle trip in the NPTS reports, a trip must be made in a POV, and the driver must be a member of a household in the NPTS sample. When the gender of vehicle trips is discussed, it refers to the gender of the driver.

Vehicle Miles of Travel (VMT)—VMT refers to miles traversed in privately operated vehicles (see below) and accounted for in trips made by those drivers who were in the households of NPTS survey respondents.

Privately Operated Vehicle (POV)—This term is used to describe automobiles, trucks, vans, and motorcycles, operated privately, to distinguish from public transportation such as buses and subways. A privately operated vehicle can include a rental car or leased vehicle; therefore, the term privately *owned* vehicle was rejected for this report.

Trip Purpose—This is the main reason for motivates the trip. For each destination, a main reason is associated with each trip. Unfortunately, like many other household-based travel surveys, the NPTS coding for trip purpose in the 1990 survey does not adequately address trip-chaining. Trip-chaining, particularly stops on the way home from work, are not neatly identified in the standard datasets. Thus, for example, to report a trip from work to the grocery store, and then to home, the first trip was coded as a shopping trip, and the second as a trip from work. This coding routine should be understood when examining trip purpose tables.

In the NPTS base dataset, there are 11 trip purposes. For this report, however, the 11 NPTS trip purposes have been condensed into nine purposes with five major categories, as follows:

- Earning a Living
 - To or From Work
 - Work-Related Business
- Family and Personal Business
 - Shopping
 - Other Family/Personal Business
- Civic/Educational/Religious
- Social and Recreational
 - Vacation/Pleasure Driving
 - Visit Friends/Relatives
 - Other Social/Recreational
- Other

It should also be understood that the tables that present "commute" trips refer to trips "To and From Work," one of the two subclasses of "Earning a Living" trips. The other subclass of the Earning a Living trips, "Work-Related Business," is not included in commute summary tables.

In Chapters 1 and 6, NPTS trips are also sub-classified into four home-based categories and one non-home-based category. The home-based categories are "Work", "Shopping", "Social/Recreational", and "Other". No trip purpose classifications are shown for the non-home-based trips.

Differences between 1983 and 1990 NPTS

This report contains many comparisons between the 1983 and 1990 NPTS results. The authors rely heavily on 1983 to 1990 comparisons because urban area residence was not included in earlier NPTS surveys. The reader should

bear in mind that some of the 1983 to 1990 changes may be due to difference in the two surveys, as described below. The sum of these differences is that the nature of the change is likely to reflect actual conditions, but the amount of change may be overstated or understated.

The main differences in methodology and terminology between the 1990 NPTS and earlier surveys are as follows:

- The 1990 survey was a telephone survey, whereas the earlier surveys used in-person home interviews. Limiting the sample to households with telephones may result in an under-representation of lower income households.
- The 1990 survey allowed another household member (proxy) to report an individual's trips if the individual (14 and older) could not be contacted after several attempts, whereas the earlier surveys did not allow such proxy interviews.
- There are geographic differences between the 1990 NPTS and earlier surveys. Some metropolitan area and central city boundaries changed. Also, the definition of "central city" was changed by the Bureau of the Census between NPTS survey years 1983 and 1990.
- The 1990 survey data were edited by the computer-assisted telephone interviewing (CATI) software during the data collection process, whereas data from the earlier surveys were edited manually after the interview. The advantage of CATI over conventional home interviews is that many data inconsistencies and quality problems are immediately identified and corrected.

TABLE 1
Personal VMT Estimates, 1983 and 1990
(Millions)

	Highway Statistics ¹	NPTS ²	Percent NPTS of Highway Statistics Estimate
1983	1,403,696	1,076,169	77%
1990	1,864,386	1,613,153	87%
Percent Increase	33 %	50 %	

¹The sum of VMT for personal passenger vehicles (automobiles and motorcycles) and part of VMT for 2-axle 4-tire trucks as reported in Table VM-1. Based on data from the 1982 and 1987 Truck Inventory and Use Surveys, the percentages of travel that pickups (2-axle, 4-tire trucks) were used for personal transportation are estimated to be 60.1% in 1983 and 73.3% in 1990.

²Includes travel period trips (including trips 75 miles or longer).

- The sample size of the surveys varied considerably; 6,500 for 1983, and 22,000 for 1990. The small sample size in the 1983 survey (less than one-third that of 1990) might contribute to larger errors.

Recognition of the differences between the 1990 NPTS and earlier surveys is important because NPTS data show that the number of miles driven for personal travel increased by 50 percent between 1983 and 1990. The NPTS data were compared with data reported in FHWA's annual publication, *Highway Statistics*¹, which shows an increase of only 33 percent for the same period (Table 1). The *Highway Statistics*, data are based on state DOT traffic counts.

One possible explanation for the large increase in personal vehicle miles of travel (VMT) between 1983 and 1990 is that the 1983 NPTS underestimated VMT because of its smaller sample size.

Limitations of Data on Transit

The NPTS dataset permits analysis of user characteristics, such as demographic and socio-economic characteristics, by various modes of transportation. This information is rarely available, especially on a national level, outside of NPTS. However, the reader is cautioned that the sample of transit trips in the 1990 NPTS may not be sufficient to draw specific conclusions regarding transit policy and funding. The remainder of this section provides further information on issues that may contribute to the differences in transit use between NPTS and the Section 15 reporting system of the Federal Transit Administration (FTA).

¹ *Highway Statistics* data include travel by all vehicles on the road, whereas NPTS data from travel day and travel period exclude "commercial driving" done by cab drivers, truck drivers, delivery persons, and others.

NPTS Sample Size Limitations

The NPTS data on transit use are based on information from 2,872 transit trips on travel day that were collected in the survey. The breakout of these trips follows:

- 1,909 by bus
- 639 by subway or elevated rail
- 294 by commuter rail and
- 30 by streetcar or trolley

Using these 2,872 trips, the NPTS results differ considerably from data in the Section 15 reporting system. The reader is cautioned that differences in the way the data are generated for NPTS and Section 15 make direct comparisons difficult. Section 15 data are based on reports submitted by each transit operator to the FTA as part of the requirements for receiving Federal funding. Transit operators generally obtain the Section 15 information using a combination of farebox receipts and on-board surveys. Section 15 data do not include demographic or socio-economic characteristics of transit users or trip purpose, distance, travel time, or other trip attributes available from the NPTS. The basic NPTS/Section 15 comparisons for unlinked trips in 1990 follow:

Unlinked Transit Trips (Millions)

	NPTS	Sec. 15	NPTS as % of Sec. 15
Bus	4,352	4,576	95.1%
Rail/Subway	1,889	2,675	70.6%
Total Transit	6,241	7,250	86.1%

Transit Trip Definition

This table uses unlinked transit trips as a basis for comparison because the Section 15 data are reported as unlinked trips. An unlinked trip is basically defined as a boarding. For example, you take a bus and a subway to work; this is one linked trip and two unlinked (i.e., the bus boarding and the subway boarding). In NPTS, unlinked trips were recorded if only one portion of the trip was on transit. NPTS data for modes other than transit are presented as linked trips.

These comparisons show that NPTS data report 6.24 billion unlinked transit trips, while Section 15 data report 7.25 billion unlinked trips, for a difference of 1.01 billion unlinked trips. A likely explanation for this difference is that travel data collected by memory recall often result in an undercount. For example, the vehicle miles of travel generated from NPTS trip level data are 13 percent lower than the comparable vehicle miles estimate based on traffic counts.

This discussion has used the unlinked trip definition to seek comparability between NPTS and Section 15. However, the transit data presented in this report are for linked trips. The following comparison of linked and unlinked transit trips in NPTS is provided to show how the two relate:

NPTS Transit Trips (Millions)

	Unlinked	Linked	Ratio Unlinked/ Linked
Bus	4,352	3,543	1.23
Rail/Subway	1,889	1,349	1.40
Total Transit	6,241	4,892	1.28

Misclassifications of Subway/Rail Trips

NPTS respondents had difficulty distinguishing between commuter rail and subway/elevated rail. Data from the 25 largest urbanized areas show that many trips were coded as commuter rail trips where there was a subway/elevated rail system, but no commuter rail, such as in Atlanta or Cleveland.

Additionally, in areas that had both commuter rail and subway/elevated rail, the NPTS data show considerably more commuter rail trips than Section 15 and considerably fewer subway trips. This occurred most notably in New York, which has a major proportion of the Nation's transit trips. The national totals are skewed if subway/elevated rail trips are misclassified as commuter rail. Because of this confusion between commuter rail and subway, the transit trip data are classified as follows:

Bus - which includes bus and streetcar

Rail/Subway - which includes commuter rail, subway and elevated rail

Coverage of Low-Income Households

There is concern that NPTS undercounted low-income households, and therefore, undercounted transit use.

The potential for an undercount of low-income households cannot be clearly defined because 28 percent of all households interviewed for the NPTS refused to report household income. There is a strong possibility that those who refused to provide income data were lower income households, but this cannot be proved. A comparison of the household characteristics did not identify any significant differences between those that did and those that did not report income.

It should also be noted that when the weighting factors were developed for the 1990 NPTS, the 1990 Decennial Census data were not yet available. Thus, the NPTS sample was expanded using the Current Population Survey *projections*. The sample was expanded based on: Census region, household size, MSA status, race (black, non-black), and ethnicity (Hispanic, non-Hispanic). Household income was not a factor.

Undercounting in Urbanized Areas

Analysis of NPTS by urbanized area size shows fewer transit trips in the largest urbanized areas than Section 15 reports. This affects not only the total number of trips, but also the specific modes used. If fewer trips were reported by residents of the largest urbanized areas, the number of NPTS subway trips would be low relative to Section 15 data. In fact, this is the largest discrepancy between the NPTS and Section 15 datasets.

Urbanized Area Totals

Table 2 is included to show the relationship between NPTS results for the total United States and for the total of the urbanized areas between 1983 and 1990. Table 3 shows the relationship between capping the trip length at 75 miles and using all trips. It is important to keep these restrictions in mind when comparing the data presented in this report with other reports from the 1990 NPTS that do not contain the same restrictions.

Table 2 shows that the proportion of total households that are in urbanized areas has declined between 1983 and 1990, from 65 percent to 63 percent. However, for 1-person households, the decline was from 71 percent to 64 percent. Other changes include a decline in

the proportion of people age-65-and-over in urbanized areas, from 62 percent in 1983 to 55 percent in 1990.

Table 3 shows that although the 75-mile cap used in the report does not have much effect on

the total number of vehicle trips or person trips, it has a significant affect on the VMT. Although nearly 98 percent of 1990 household vehicle trips were less than 75 miles, these trips accounted for only 87 percent of the vehicle miles of travel (VMT).

TABLE 2
Summary Statistics on Demographic Characteristics
1983 and 1990 NPTS

Households (000)	1983		1990	
	Total	Urban Total	Total	Urban Total
All	85,371	55,857	93,347	58,977
1 Person	19,354	13,810	22,999	14,945
2 Persons	27,169	17,633	30,114	18,685
3 Persons	14,756	9,149	16,128	10,176
4 + Persons	24,092	15,264	24,106	15,172
Persons (000)	Total	Urban Total	Total	Urban Total
All	229,453	146,180	239,416 ¹	138,910
Under 16 Years	53,682	N/A	54,303	N/A
16-19	15,268	10,049	13,851	8,728
20-34	60,788	41,335	59,517	40,336
35-64	75,353	46,440	82,480	50,634
65 Years and Older	24,362	15,112	26,955	14,952
All Male	111,514	69,974	114,441	66,346
All Male - 16 and Older	83,645	52,817	86,432	54,248
All Female	117,939	76,206	124,975	72,512
All Female - 16 and Older	92,080	60,119	96,371	60,402
All - 5 and Older	212,932	135,641	222,101	136,677
Licensed Drivers (000)	Total	Urban Total	Total	Urban Total
All	147,015	92,574	163,025 ¹	100,827
Male	75,639	47,089	80,289	49,969
Female	71,376	45,486	82,707	50,839
Workers (000)	Total	Urban Total	Total	Urban Total
All	103,244	66,541	118,343 ¹	76,397
Male	58,849	36,779	63,996	40,885
Female	44,395	29,763	54,334	35,499
Household Vehicles (000)	Total	Urban Total	Total	Urban Total
	143,714	87,011	165,221	98,675

¹Includes "don't know" and "refusals".
N/A = not applicable.

TABLE 3
Summary Statistics Total Travel
1983 and 1990 NPTS

	1983			1990		
	Total	Urban Total All Trips	Urban Total ≤ 75 Miles	Total	Urban Total All Trips	Urban Total ≤ 75 Miles
Household Vehicle Trips (000,000)	126,874	79,348	78,834	158,927	98,184	96,106
Household VMT (000,000)	1,002,139	597,086	515,705	1,409,600	797,164	690,847
Person Trips (000,000)	224,385	140,950	139,670	249,562	156,139	151,070
Person Miles of Travel (000,000)	1,946,662	1,152,222	848,827	2,315,300	1,345,529	1,004,367

Chapter 1

Person and Vehicle Trip Rates

This chapter focuses on trip rates for households and persons, rather than counts or distributions of trips by subgroups. Person trip rates and vehicle trip rates are described by trip purpose, gender and age of the trip-makers, availability of vehicles, and household size and income.

Vehicle trips are trips in privately operated vehicles (POVs).

Comparisons are made with 1983 survey results and between several urban size groups. Average daily person trip summaries are also shown with breakdowns of transportation mode, gender, and age.

To provide NPTS results more comparable to typical regional household travel surveys, the tables on trip rates use only *weekday* trips of 75 miles or less. Remaining chapters of this report include both *weekday* and *weekend* travel, but exclude trips greater than 75 miles.

Key Findings

- The average 1990 household generated 6.9 person trips and 4.6 vehicle trips per day. The average person made 3.9 person trips and 2.5 vehicle trips each day.
- The average daily vehicle trip rate in 1990 for households in large urban areas that have rail transit service available was 21.5 percent lower than for those households in other large urban areas without rail service.
- Household size, income level, and availability of vehicles are shown to be important determinants of household person and vehicle trips.
- The most significant change from 1983 to 1990 was the increased proportion of person trips for family/personal business, aside from shopping. In fact, by 1990, such trips surpassed the average person's daily trips to and from work when including both weekday and weekend travel.
- For all trips, there were 242.1 billion person trips in 1990, up from 227.6 billion in 1983, a 6.3 percent increase over the 6-year period.

FIGURE 1-1
Daily Trip Rates per Household by Urban Size Group
(Weekdays)

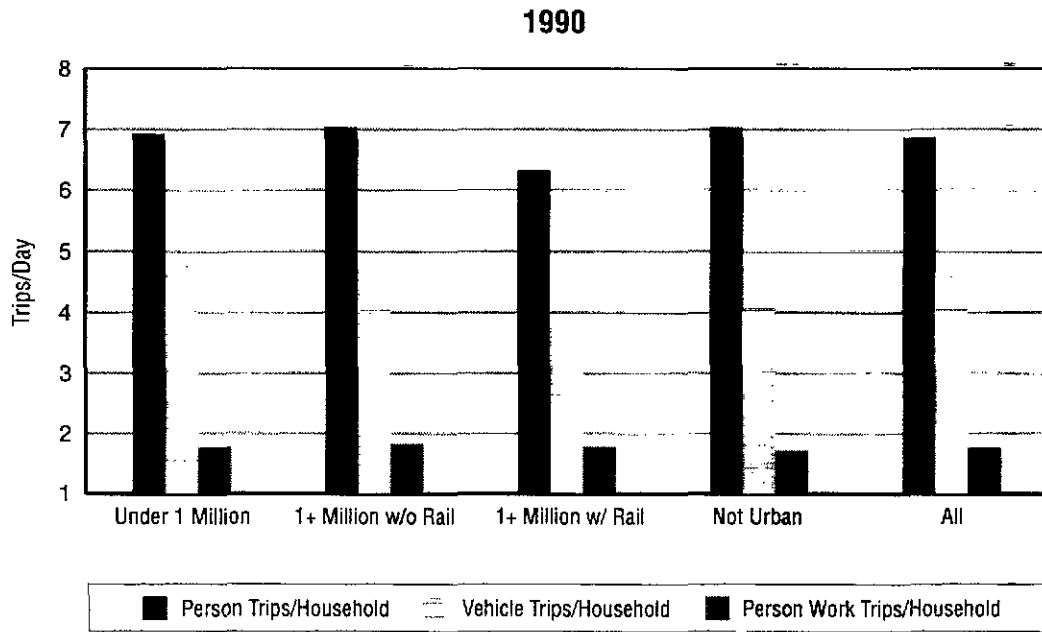
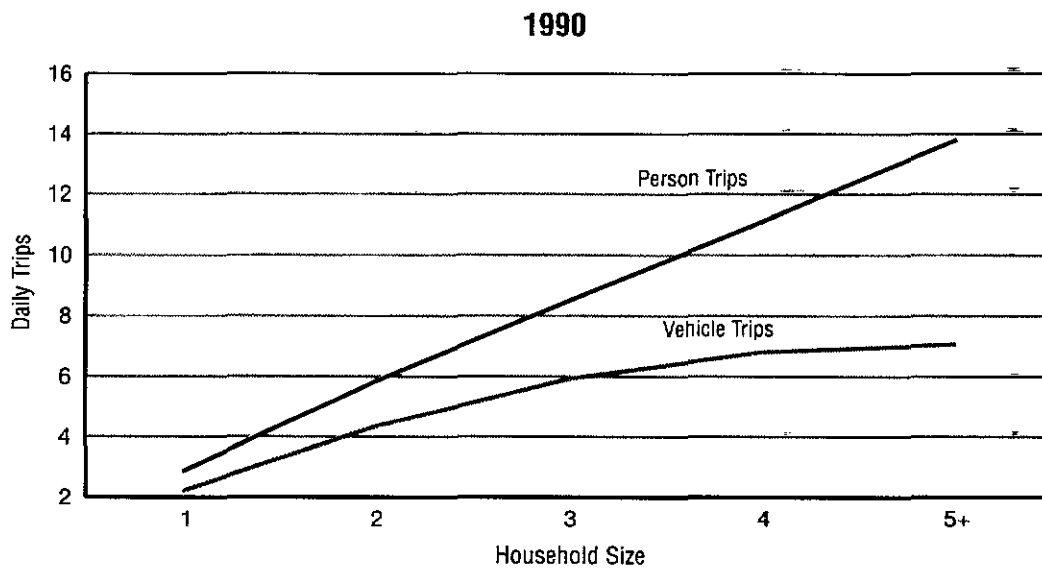


FIGURE 1-2
Daily Trip Rates per Household by Household Size
(Weekdays)



Note: Excludes trips greater than 75 miles.

Person and Vehicle Trips

The trip rate tables, Tables 1-1 through 1-12, include only weekday trips of 75 miles or less. These tables showing person and vehicle trip rates were prepared to be more comparable to regional household surveys. Tables 1-1 through 1-5 and 1-11 show person trip rates; Tables 1-6 through 1-9 and 1-12 show vehicle trip rates. Tables 1-13 and 1-14 include both weekday and weekend travel.

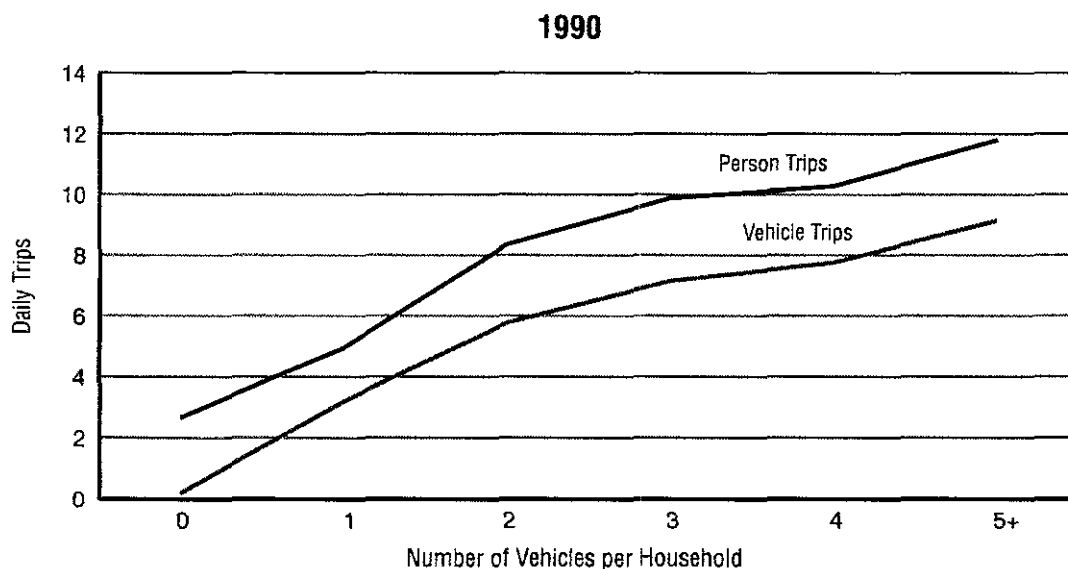
As shown in Figure 1-1 and Tables 1-2 and 1-7, the average household made 6.9 daily person trips and 4.6 daily vehicle trips in 1990. As shown in Figure 1-2, person trips increased in direct proportion with household size. Vehicle trips also increased with household size but at progressively lower rates as household size approaches five or more persons. In fact,

vehicle trips increased by only 0.27 vehicle trip, or 3.8 percent, as household size increased from four to five or more persons.

For weekday travel, home-based work trips (to and from work and work-related business) remained the most common type of household trip. They comprised more than one-fourth (25.9 percent) of the daily person trips (Table 1-1) and almost one-third (32.2 percent) of the daily vehicle trips (Table 1-6) of the average 1990 household. (Later in this chapter, Tables 1-13 and 1-14 show that when weekend trips are included, home-based family/personal business trips, other than shopping, become slightly more prevalent than work-related trips.)

Home-based work trips for the average household surveyed were fewer than two per day, 1.8 person trips and 1.5 vehicle trips (Table 1-1 and

FIGURE 1-3
Daily Trip Rates by Vehicles per Household
(Weekdays)



Note: Excludes trips greater than 75 miles.

1-6). This is because some surveyed households had no workers and some had workers who were ill, worked at home, worked part-time, or were on vacation and, therefore, did not report a work trip. Trip chaining also affected the average reported here.

Other home-based person trips are the second most frequently made person trip (1.8 per day) for the average household (Table 1-1). Such trips include medical, school, church, other family/personal business, and miscellaneous trips.

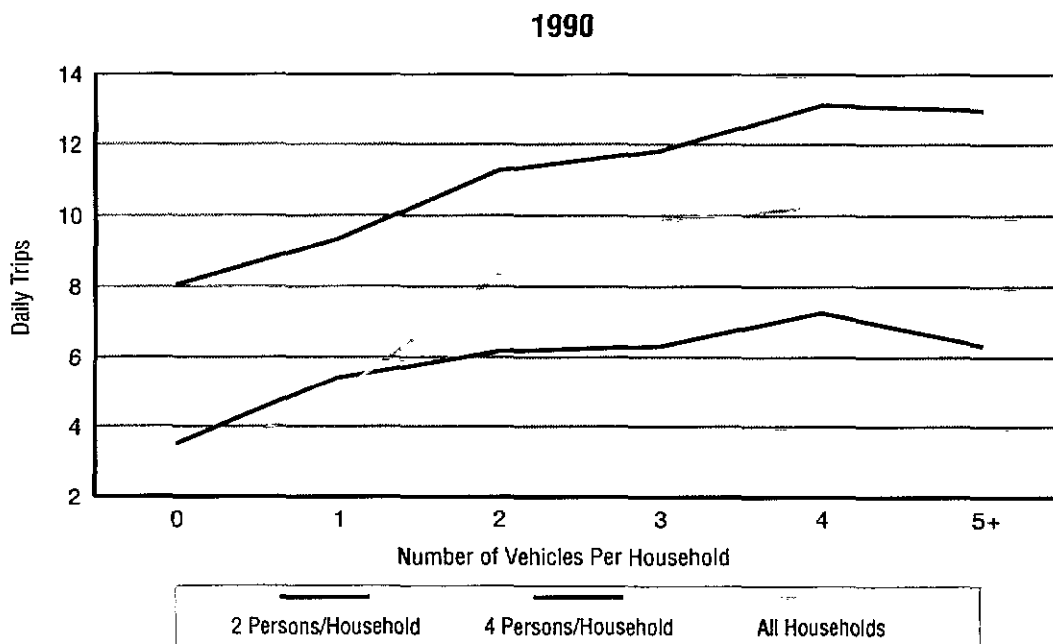
Non-home-based person trips (1.5 per day) are trips that begin and end at points other than the

home. They represented 22.1 percent of all household person trips in 1990 (Table 1-1).

Fewer Trips in Urbanized Areas with Rail

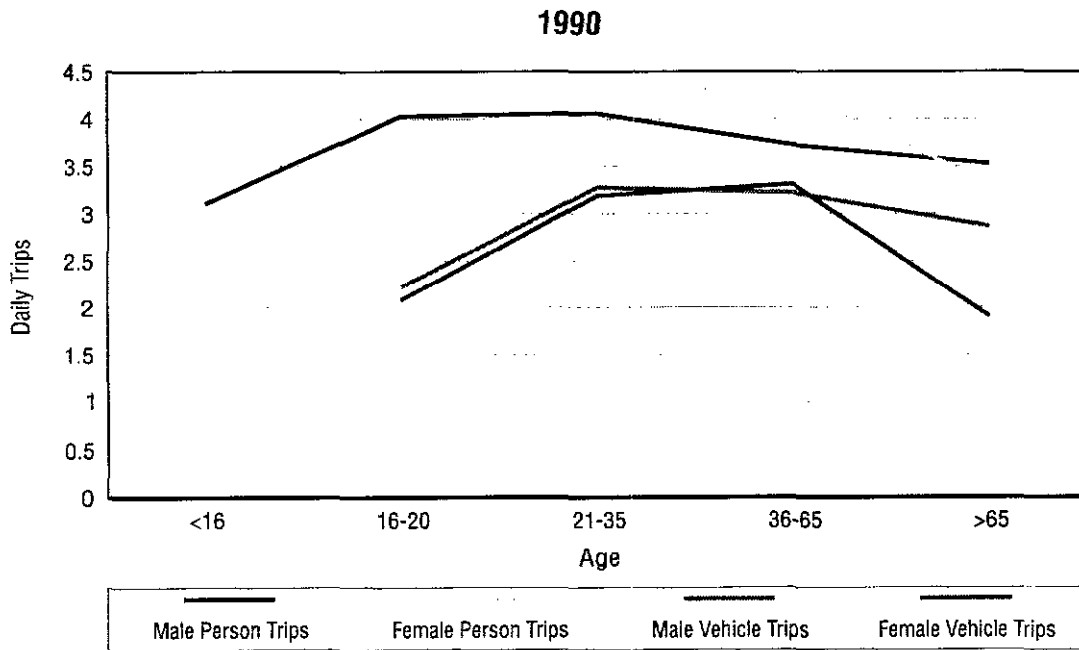
There is little difference in the trip rates among the several urban size groups. The exceptions are the variations seen in the urban group with rail (Figure 1-1 and Tables 1-1 and 1-6), where the lower-than-average total person and vehicle trip rates (6.3 and 3.8, respectively) are mostly accounted for by fewer-than-average non-home-based trips (both person and vehicle trips) and fewer-than-average work-related vehicle trips. The average vehicle trip rate in urban areas with rail was 21.5 percent less than in areas without rail (Table 1-6).

FIGURE 1-4
Daily Person Trip Rates by Vehicles per Household
(Weekdays)



Note: Excludes trips greater than 75 miles.

FIGURE 1-5
Daily Trip Rates by Age and Gender
(Weekdays)



Note: Excludes trips greater than 75 miles.

In particular, vehicle trip rates for work are significantly lower in areas with rail service. Chapter 4 on travel mode shows that both transit (bus and rail/subway) and walk trips contribute to lower vehicle trip rates in these areas. In addition, the number of non-home-based person trips in urban areas with rail may be fewer because the rail commuter is less likely to make intermediate stops on the way to and from work than the commuter in a privately operated vehicle.

Numbers of Vehicles and Size of Household are Keys to Predicting Trips

Figures 1-3 and 1-4 and Tables 1-5 and 1-10 show that the number of vehicles available to households is an important determinant of trip-making. Zero-vehicle households average just

2.6 person trips and 0.2 vehicle trip each day. At the other extreme, households with five or more available vehicles average 11.8 person trips and 9.2 vehicle trips each day.

As shown in Figure 1-4 and Table 1-5, the size of the household also determines household trip rates. On average, two-person households with two vehicles available made 75.0 percent more trips than two-person households with zero vehicles available. Similarly, the four-person household with four vehicles available made 40.4 percent more person trips than the four-person household with one vehicle available.

Average Person Makes 3.9 Trips per Day

Table 1-11 shows 1990 daily person trips, with the average person making 3.9 trips per day.

Also, 84.0 percent of total trips, or 3.3 trips per day, were made in privately operated vehicles (POVs). Table 1-12 shows vehicle trip rates by age and gender.

These two tables and Figure 1-5 show that although females generally average more trips per day than males in the same age group, males generally make more vehicle trips. One exception was that women age 36 to 65 make slightly more vehicle trips than men in the same age group. After age 65, males continue to make almost as many vehicle trips as in their younger adult years. After age 65, females make far fewer daily vehicle trips than males. However, adding all age groups (Table 1-12), the average female made nearly as many vehicle trips each day as the average male.

Other Family/Personal Business Trips Increase in Proportion of Total Trips

When both weekday and weekend travel are included, the most frequently reported trip purpose in 1990 was for family/personal business, other than shopping (Table 1-13). In 1983, there was a larger difference in the proportion of earning a living trips (22.9 percent) and family/personal business, other than shopping (17.4 percent) than in 1990 (21.7 percent and 22.7 percent, respectively). However, the 1983 to 1990 differences in the other categories -- visit friends/relatives, other social/recreational, and shopping -- are small and may indicate that part of the shift is the result of coding variations.

Table 1-14 shows that trips for earning a living still account for the largest proportion of VMT (36.5 percent), despite the above cited proportional shifts in trips.

TABLE 1-1
Daily Person Trips per Household by Trip Purpose and Urban Size Group
(Weekdays)

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Home-Based Work	1.78	1.84	1.79	1.73	1.78
Home-Based Shopping	0.77	0.74	0.75	0.78	0.76
Home-Based Social/Recreational	1.02	1.02	0.90	0.99	0.98
Home-Based Other	1.81	1.88	1.64	1.94	1.84
Non-Home-Based	1.56	1.57	1.24	1.60	1.52
All	6.93	7.04	6.33	7.04	6.88

Note: Excludes trips greater than 75 miles.

TABLE 1-2
Daily Person Trips per Household by Household Size and Urban Size Group
(Weekdays)

1990

Household Size	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
One	2.85	3.35	2.74	2.69	2.87
Two	6.15	6.02	5.87	5.63	5.87
Three	9.30	8.29	7.65	8.65	8.53
Four	11.41	10.82	9.64	11.87	11.14
Five +	13.67	14.24	12.39	14.43	13.83
All	6.93	7.04	6.33	7.04	6.88

Note: Excludes trips greater than 75 miles.

TABLE 1-3
Daily Person Trips per Household by Household Income and Urban Size Group
(Weekdays)

1990

Household Income	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< \$5,000	4.73	5.93	4.41	4.27	4.66
\$5,000 to 9,999	5.04	4.02	4.21	4.19	4.38
\$10,000 to 14,999	4.20	5.14	3.30	5.75	4.94
\$15,000 to 19,999	6.65	6.23	5.03	6.15	6.13
\$20,000 to 24,999	6.57	6.71	5.95	7.43	6.85
\$25,000 to 29,999	7.18	6.71	7.26	8.25	7.55
\$30,000 to 34,999	8.14	7.30	6.60	8.61	7.86
\$35,000 to 39,999	8.21	7.57	7.08	8.94	8.22
\$40,000 to 44,999	10.13	9.11	6.43	9.57	8.96
\$45,000 to 49,999	9.42	10.34	9.00	10.99	10.10
\$50,000 to 54,999	10.02	8.69	8.22	9.71	9.23
\$55,000 to 59,999	11.11	9.61	7.48	10.35	9.76
\$60,000 to 64,999	11.69	9.73	9.00	9.46	9.96
\$65,000 to 69,999	9.82	10.18	9.83	8.93	9.64
\$70,000 to 74,999	9.80	10.89	9.22	10.60	10.26
\$75,000 to 79,999	10.06	8.36	9.45	11.77	9.76
\$80,000 +	9.65	9.36	9.66	9.92	9.65
All	6.93	7.04	6.33	7.04	6.88

Note: Excludes trips greater than 75 miles.

TABLE 1-4
Daily Person Trips per Household by Household Vehicles and Urban Size Group
(Weekdays)

1990

Household Vehicles	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
Zero	2.52	2.48	3.25	2.02	2.64
One	4.90	5.42	5.03	4.62	4.93
Two	8.52	8.41	8.04	8.32	8.34
Three	10.91	9.45	9.91	9.63	9.87
Four	12.68	10.43	11.46	9.36	10.27
Five +	11.54	14.37	11.74	11.34	11.81
All	6.93	7.04	6.33	7.04	6.88

Note: Excludes trips greater than 75 miles.

TABLE 1-5
Daily Person Trips per Household by Household Vehicles,
Household Size, and Urban Size Group
(Weekdays)

1990

Household Size

Household Vehicles	One	Two	Three	Four	Five +	All
Under 1 Million						
Zero	1.12	4.12	4.70	8.21	5.26	2.52
One	3.37	5.40	8.04	8.97	10.23	4.90
Two	2.94	6.49	9.58	11.49	14.91	8.52
Three	2.86	7.19	11.28	12.59	15.24	10.91
Four	1.72	9.85	12.16	14.82	15.62	12.68
Five +	1.66	6.65	9.64	12.21	17.68	11.54
All	2.85	6.15	9.30	11.41	13.67	6.93
1 Million + w/o Rail						
Zero	1.46	2.92	4.33	10.22	5.93	2.48
One	3.75	5.64	8.31	9.53	14.39	5.42
Two	3.63	6.15	8.22	10.60	14.93	8.41
Three	4.73	6.84	8.86	11.92	13.86	9.46
Four	3.80	8.05	10.12	12.15	13.73	10.43
Five +	5.31	9.00	13.86	16.53	15.23	14.37
All	3.35	6.02	8.29	10.82	14.24	7.04
1 Million + w/ Rail						
Zero	1.79	3.98	5.36	7.27	9.16	3.25
One	3.19	5.64	6.90	8.33	9.85	5.03
Two	2.94	6.54	7.65	10.31	11.89	8.04
Three	5.00	6.35	10.09	10.38	15.69	9.91
Four	0.93	7.68	8.54	10.19	15.95	11.46
Five +	5.00	5.90	7.35	8.79	13.92	11.74
All	2.74	5.87	7.65	9.64	12.39	6.33

Note: Excludes trips greater than 75 miles.

TABLE 1-5 (Continued)
Daily Person Trips per Household by Household Vehicles,
Household Size, and Urban Size Group
(Weekdays)

1990

Household Size

Household Vehicles	One	Two	Three	Four	Five +	All
Not Urban Area						
Zero	1.23	2.51	5.13	8.57	9.67	2.02
One	2.87	5.16	8.02	10.10	10.22	4.62
Two	3.68	5.87	8.48	11.99	15.06	8.32
Three	3.42	5.92	9.79	11.99	15.75	9.63
Four	3.69	6.50	8.18	13.70	12.82	9.35
Five +	4.46	6.01	9.78	12.99	15.14	11.34
All	2.69	5.63	8.65	11.87	14.43	7.04
All						
Zero	1.43	3.53	4.97	8.06	7.46	2.64
One	3.24	5.41	7.79	9.35	11.03	4.93
Two	3.42	6.18	8.54	11.28	14.44	8.34
Three	3.91	6.32	9.97	11.83	15.31	9.87
Four	3.13	7.26	8.80	13.13	14.25	10.27
Five +	3.74	6.32	10.15	12.97	15.42	11.81
All	2.87	5.87	8.53	11.14	13.83	6.88

Note: Excludes trips greater than 75 miles.

TABLE 1-6
Daily Vehicle Trips per Household by Trip Purpose and Urban Size Group
(Weekdays)

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Home-Based Work	1.53	1.60	1.28	1.53	1.49
Home-Based Shopping	0.55	0.50	0.41	0.56	0.52
Home-Based Social/Recreational	0.55	0.52	0.43	0.52	0.51
Home-Based Other	1.00	0.98	0.73	1.00	0.95
Non-Home-Based	1.07	1.13	0.79	1.10	1.04
All	4.77	4.79	3.76	4.79	4.59

Note: Excludes trips greater than 75 miles.

TABLE 1-7
Daily Vehicle Trips per Household by Household Size and Urban Size Group
(Weekdays)

1990

Household Size	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
One	2.30	2.69	1.69	2.22	2.23
Two	4.75	4.68	3.71	4.33	4.37
Three	6.51	6.01	4.83	6.16	5.95
Four	7.00	6.74	5.59	7.37	6.83
Five +	7.36	7.10	6.10	7.46	7.09
All	4.77	4.79	3.76	4.79	4.59

Note: Excludes trips greater than 75 miles.

TABLE 1-8
Daily Vehicle Trips per Household by Household Income and Urban Size Group
(Weekdays)

1990

Household Income	Urban Size Group					All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area		
< \$5,000	2.59	2.23	1.37	2.04	2.09	
\$5,000 to 9,999	2.67	2.29	1.19	2.58	2.32	
\$10,000 to 14,999	3.03	3.19	1.54	3.64	3.12	
\$15,000 to 19,999	4.59	3.98	2.61	4.11	4.00	
\$20,000 to 24,999	4.49	4.40	3.58	5.05	4.55	
\$25,000 to 29,999	4.59	4.86	4.09	5.82	5.05	
\$30,000 to 34,999	5.68	5.30	3.89	5.95	5.37	
\$35,000 to 39,999	6.09	5.18	4.50	5.94	5.60	
\$40,000 to 44,999	7.03	5.99	4.32	6.60	6.11	
\$45,000 to 49,999	6.80	6.91	5.74	7.93	7.01	
\$50,000 to 54,999	7.42	6.75	5.03	6.88	6.59	
\$55,000 to 59,999	8.82	6.96	5.13	7.42	7.14	
\$60,000 to 64,999	8.45	6.37	6.54	7.00	7.10	
\$65,000 to 69,999	7.32	7.95	6.28	5.78	6.69	
\$70,000 to 74,999	8.16	8.13	6.47	7.32	7.56	
\$75,000 to 79,999	7.04	6.45	6.14	9.17	7.11	
\$80,000 +	7.16	7.10	6.45	6.93	6.86	
All	4.77	4.79	3.76	4.79	4.59	

Note: Excludes trips greater than 75 miles.

TABLE 1-9
Daily Vehicle Trips per Household by Household Vehicles and Urban Size Group
(Weekdays)

1990

Household Vehicles	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
Zero	0.20	0.24	0.08	0.17	0.16
One	3.42	3.62	2.71	3.05	3.18
Two	6.01	5.77	5.56	5.71	5.76
Three	8.06	7.17	7.37	6.72	7.14
Four	9.36	8.17	8.22	7.09	7.75
Five +	8.83	11.09	8.50	8.99	9.15
All	4.77	4.79	3.76	4.79	4.59

Note: Excludes trips greater than 75 miles.

TABLE 1-10
Daily Vehicle Trips per Household by Household Vehicles,
Household Size, and Urban Size Group
(Weekdays)

1990

Household Size

Household Vehicles	One	Two	Three	Four	Five +	All
Under 1 Million						
Zero	0.07	0.68	0.24	0.08	0.40	0.20
One	2.93	3.54	4.78	4.28	4.96	3.42
Two	2.63	5.46	7.01	7.05	7.26	6.01
Three	2.62	6.42	8.86	9.17	8.97	8.06
Four	1.72	7.39	10.92	10.93	10.18	9.36
Five +	1.66	4.93	7.18	7.03	14.36	8.83
All	2.30	4.75	6.51	7.00	7.36	4.77
1 Million + w/o Rail						
Zero	0.15	0.00	0.39	1.93	0.65	0.24
One	3.19	3.81	4.78	4.40	4.85	3.62
Two	3.44	5.08	6.20	6.64	7.35	5.77
Three	4.65	5.93	7.55	8.55	7.84	7.17
Four	3.80	6.85	7.97	9.37	9.92	8.17
Five +	3.46	7.00	12.65	13.62	10.78	11.09
All	2.69	4.68	6.01	6.74	7.10	4.79
1 Million + w/ Rail						
Zero	0.02	0.12	0.25	0.18	0.08	0.08
One	2.44	2.83	3.09	3.50	2.55	2.71
Two	2.89	5.19	5.63	6.34	6.37	5.56
Three	5.06	5.38	8.23	7.82	8.78	7.37
Four	0.93	5.02	6.59	8.48	10.24	8.22
Five +	3.00	4.55	7.35	7.60	9.60	8.50
All	1.69	3.71	4.83	5.59	6.10	3.76

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 1-10 (Continued)
Daily Vehicle Trips per Household by Household Vehicles,
Household Size, and Urban Size Group
(Weekdays)

1990

Household Size

Household Vehicles	One	Two	Three	Four	Five +	All
Not Urban Area						
Zero	0.07	0.12	0.79	1.92	0.69	0.17
One	2.55	3.08	4.06	5.20	4.17	3.05
Two	3.36	4.88	6.34	7.19	7.17	5.71
Three	3.20	4.80	7.59	7.69	8.88	6.72
Four	3.69	5.76	6.11	9.84	8.78	7.09
Five +	3.66	5.29	8.73	10.50	10.78	8.99
All	2.22	4.33	6.16	7.37	7.46	4.79
All						
Zero	0.07	0.21	0.36	0.60	0.40	0.16
One	2.76	3.27	4.11	4.45	4.11	3.18
Two	3.16	5.11	6.34	6.89	7.09	5.76
Three	3.77	5.31	7.94	8.12	8.71	7.14
Four	3.13	6.17	6.81	9.76	9.60	7.75
Five +	2.93	5.26	8.84	10.31	11.29	9.15
All	2.23	4.37	5.95	6.83	7.09	4.59

Note: Excludes trips greater than 75 miles.

TABLE 1-11
Daily Trips per Person by Age, Gender, and Mode of Transportation
 (Urbanized Area Households, Weekday Travel)

1990

Mode of Transportation	Under 16		16 to 20		21 to 35		36 to 65		Over 65		All
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
POV	1.68	2.00	3.03	3.14	3.57	3.83	3.41	3.90	3.21	2.78	3.26
Transit	0.09	0.08	0.19	0.22	0.13	0.15	0.10	0.09	0.09	0.11	0.12
Other	0.61	0.52	0.27	0.18	0.08	0.03	0.03	0.02	0.03	0.04	0.14
Walk	0.72	0.65	0.53	0.62	0.27	0.38	0.19	0.26	0.26	0.38	0.37
All	3.10	3.25	4.02	4.15	4.05	4.39	3.72	4.27	3.51	3.31	3.88

Note: Excludes trips greater than 75 miles.

TABLE 1-12
Daily Vehicle Trips per Person by Age and Gender
(Urbanized Area Households, Weekday Travel)

1990

Age	Gender		All
	Male	Female	
16 to 20	2.21	2.07	2.14
21 to 35	3.27	3.18	3.23
36 to 65	3.21	3.38	3.25
Over 65	2.85	1.89	2.35
All	2.58	2.53	2.56

Note: Excludes trips greater than 75 miles.

**TABLE 1-13
Person Trips by Trip Purpose and Urban Size Group**

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	19.47%	22.12%	23.77%	19.53%	20.57%
Work-Related Business	2.03	2.06	2.72	2.44	2.30
Family and Personal Business					
Shopping	19.01	19.88	17.16	17.50	18.22
Other Family/Personal Business	15.97	17.77	17.55	18.24	17.38
Civic/Educational/Religious	11.99	10.91	12.34	12.04	11.80
Social and Recreational					
Vacation/Pleasure Driving	0.86	0.44	0.36	0.64	0.67
Visit Friends/Relatives	11.31	10.34	9.63	11.34	10.89
Other Social/Recreational	17.18	14.12	14.54	15.71	15.78
Other	2.19	2.35	1.92	2.54	2.30
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Person Trips (in Millions)	71,490	31,693	33,714	82,680	227,589

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 1-13 (Continued)
Person Trips by Trip Purpose and Urban Size Group

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	19.75%	20.80%	22.33%	19.34%	20.32%
Work-Related Business	1.33	1.31	1.13	1.49	1.35
Family and Personal Business					
Shopping	18.74	19.37	19.96	18.73	19.10
Other Family/Personal Business	22.30	22.61	20.43	24.09	22.66
Civic/Educational/Religious	11.49	10.83	10.88	11.97	11.42
Social and Recreational					
Vacation/Pleasure Driving	0.35	0.30	0.36	0.52	0.41
Visit Friends/Relatives	10.52	9.04	9.56	9.35	9.59
Other Social/Recreational	14.77	15.02	14.83	13.69	14.42
Other	0.74	0.71	0.52	0.80	0.71
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Person Trips (in Millions)	54,454	48,578	48,039	91,034	242,104

Note: Excludes trips greater than 75 miles.

TABLE 1-14
Person Trips and Vehicle Miles of Travel by Trip Purpose and Gender
(Urbanized Area Households)

1990

Trip Purpose	Person Trips (All Modes)			VMT (POV)		
	Male	Female	All	Male	Female	All
Earning a Living						
To or From Work	24.07%	18.05%	20.91%	39.70%	32.21%	36.52%
Work-Related Business	1.65	0.91	1.26	2.48	1.19	1.93
Family and Personal Business						
Shopping	16.98	21.46	19.33	9.92	14.70	11.95
Other Family/Personal Business	19.58	23.81	21.80	17.27	23.40	19.87
Civic/Educational/Religious	10.87	11.26	11.08	4.02	5.40	4.61
Social and Recreational						
Vacation/Pleasure Driving	0.41	0.28	0.34	1.03	0.43	0.78
Visit Friends/Relatives	9.50	9.96	9.74	10.11	11.78	10.82
Other Social/Recreational	16.19	13.68	14.87	14.76	10.29	12.86
Other	0.74	0.58	0.66	0.70	0.59	0.65
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Person Trips (in Millions)	71,720	79,319	151,039	397,968	292,793	690,761

Note: Excludes trips greater than 75 miles.

Chapter 2 Vehicle Miles of Travel (VMT)

This chapter describes characteristics of vehicle miles of travel (VMT) in privately operated vehicles, including travel purpose, vehicle type, trip length, type of trip, gender of traveler, and average vehicle occupancy. Comparisons are made among households of various size, income level, number of available vehicles, and number of vehicles per driver. Comparisons are also made between several population groups, between 1983 and 1990 travel, between vehicle trips and vehicle travel, and between the travel characteristics of households located inside and outside the central cities of urbanized areas.

The information is for trips of 75 miles or less.

Key Findings

- Travel (VMT) increased 37 percent between 1983 and 1990; this compares with a 4 percent increase in population. The high rate of VMT growth is due to increasing personal trip-making, shifts to driving alone, increasing trip lengths, and an increasing propensity to make trips in POVs.
- Commuting represented 36 percent of total average daily VMT in 1990, up from 34 percent in 1983. Commutes of 8 miles or more account for more than 80 percent of commuting VMT.
- Travel to accomplish family and personal business, other than shopping, which was second in importance to commuting VMT in both 1983 and 1990, is the fastest growing element of household VMT.
- Females had shorter commute distances and a smaller share of commuting VMT. However, women still report more VMT for shopping and other family/personal business trips.
- Commuting VMT increases with increases in household size, income, and available vehicles.

Total Travel Increased 37 Percent Between 1983 and 1990

Based on the NPTS data, vehicle miles of travel increased from about 878 million in 1983 to 1.2 billion in 1990, or 37 percent (Table 2-1). Caution should be exercised when using this information. First, these findings are based on a small sample of households particularly in 1983, when the NPTS sample had only 6,500 households. (Please refer to discussion in Introduction, page 5.) Second, the information does not represent all trip-making. Trips greater than 75 miles were excluded.

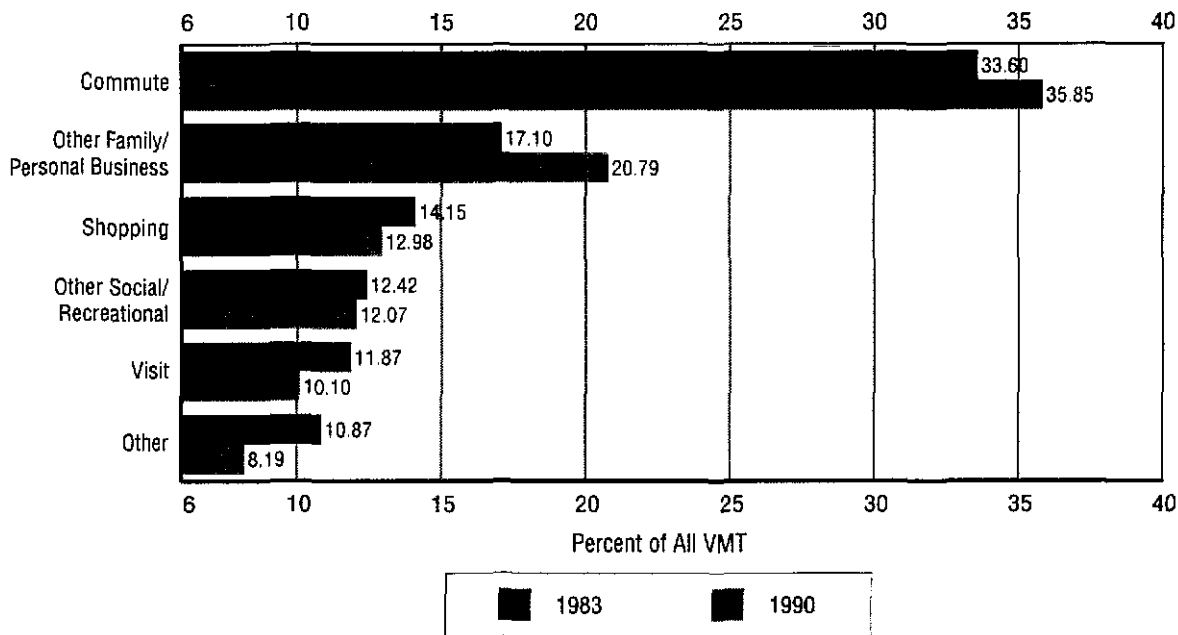
Part of this disproportionately large VMT increase is due to the 6 percent increase in personal trip-making (see Chapter 1). Part is

due to travel mode shift to POVs (82 to 87 percent) between 1983 and 1990 (see Chapter 4). Part is due to the 11 percent increase in average trip lengths between 1983 and 1990 (Table 2-2). And part is due to the increasing propensity to travel alone, especially for commuting trips (Table 2-5). These shifts and increases, when combined with the effects of increased population and households, all contribute to the extraordinary VMT increase between 1983 and 1990.

Commute Travel Dominates

More than one-third of all 1990 VMT (35.9 percent) was for commuting (Figure 2-1). This is up by 2.3 percent from 1983. Even in large urban areas with rail, commuting trips in pri-

FIGURE 2-1
Vehicle Miles of Travel by Trip Purpose
(Privately Operated Vehicles)



Note: Excludes trips greater than 75 miles.

vately operated vehicles command an increasing share of VMT (Table 2-1).

As shown in Table 2-10, 1990 commuting travel represented an especially high proportion of travel (38.0 percent) in households outside the central cities of urbanized areas. This is indicative of the longer average commute trip length for suburbanites and likely reflects the suburbanization of employment between 1983 and 1990.

Factors Contributing to Commuting Travel

Tables 2-5 through 2-7 show the positive relationship between household income, household size, and vehicle availability with commute VMT.

Income

As shown in Table 2-5, both the number of commute trips and VMT are disproportionately greater in higher income households than in lower income households. For example, the 16 percent of all 1990 households that had incomes above \$60,000 generated 27 percent of the 1990 commute VMT. Conversely, households with incomes below \$10,000 were 12.6 percent of 1990 households and generated only 2.9 percent of the commute VMT.

Household income is also a factor in commuting trip lengths. Table 2-5 shows that trip lengths generally increase as income rises.

Size

We expect commute VMT per household to increase with household size, as larger households are more likely to have more people in the labor force. This is confirmed in Table 2-6 showing that households of one and two persons generate a lesser proportion of commute VMT than households of larger size.

Household size is also an indication of average POV occupancy of household commuters. Table 2-6 shows that larger households are more likely to carpool or vanpool than smaller households.

Vehicle Availability

Table 2-7 shows the relationships between the number of vehicles available in a household and other factors such as average commute trip length. It shows a decline from 1983 to 1990 in the proportion of households with no vehicles available (from 15.7 to 10.9 percent), while at the same time shows the substantial increase in two-vehicle households (from 32.5 to 37.7 percent). Consequently, the proportion of commute VMT generated by zero- and one-vehicle households dropped from 21.3 percent to 17.4 percent over the 1983 to 1990 period.

Other Family/Personal Business Travel is Fast Growing

Although Table 2-1 shows commuting VMT in privately operated vehicles increased from 33.6 percent to 35.9 percent between 1983 and 1990, VMT to accomplish other family/personal business increased at a faster pace, from 17.1 percent of total VMT in 1983 to 20.8 percent in 1990. Americans' continued pursuit of a suburban lifestyle, together with their increasingly complex society, makes it necessary to make more other family/personal business trips but also more trips of longer lengths.

Most Households Have at Least One Vehicle per Driver

In 83.9 percent of 1990 urbanized area households, there was one or more vehicles for each driver (Table 2-8). Furthermore, 17.4 percent of 1990 urbanized area households had two or

more vehicles per driver, up from just 7.5 percent in 1983. In more than six out of every 10 urbanized area households (63.1 percent in 1983 and 60.5 percent in 1990), there was between 1.0 and 1.5 vehicles for every driver, and the trips of these households accounted for almost two-thirds of all urbanized commute VMT in both survey years.

Male VMT is Increasing Faster Than Female VMT

The increase in travel by women has been discussed widely, but travel by men has also increased rapidly. Table 2-9 shows that VMT by males increased absolutely and proportionally faster over the 1983 to 1990 period than female VMT. Consistent with the fact that the average woman made fewer average daily vehicle trips than men in 1990 (Chapter 1), women reported 26 percent fewer VMT. Women, however, retained major shares of shopping and other family personal/business travel.

TABLE 2-1
Vehicle Miles of Travel by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	31.53%	39.19%	37.88%	31.47%	33.60%
Work-Related Business	3.44	3.43	5.19	4.23	3.99
Family and Personal Business					
Shopping	13.91	13.48	11.96	15.51	14.15
Other Family/Personal Business	16.48	16.85	15.04	17.97	17.10
Civic/Educational/Religious	4.34	4.34	4.77	4.49	4.51
Social and Recreational					
Vacation/Pleasure Driving	2.26	0.84	1.43	0.87	1.34
Visit Friends/Relatives	12.94	10.62	9.73	12.45	11.87
Other Social/Recreational	14.48	9.48	12.85	11.98	12.42
Other	0.62	1.77	1.15	1.03	1.03
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total VMT (in Millions)	247,215	131,632	122,389	363,536	878,323

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 2-1 (Continued)
Vehicle Miles of Travel by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	33.10%	37.69%	38.86%	34.96%	35.85%
Work-Related Business	2.39	1.89	1.49	2.17	2.04
Family and Personal Business					
Shopping	12.83	11.09	11.96	14.37	12.98
Other Family/Personal Business	20.31	21.24	17.87	22.03	20.79
Civic/Educational/Religious	5.32	4.42	4.06	4.76	4.67
Social and Recreational					
Vacation/Pleasure Driving	1.02	0.40	0.93	1.01	0.87
Visit Friends/Relatives	11.72	9.80	10.99	9.14	10.10
Other Social/Recreational	12.64	12.62	13.37	10.99	12.07
Other	0.66	0.84	0.44	0.56	0.61
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total VMT (in Millions)	230,907	243,323	216,618	513,607	1,204,454

Note: Excludes trips greater than 75 miles.

TABLE 2-2
Average Trip Length by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	6.78 Mi.	9.36 Mi.	9.13 Mi.	8.99 Mi.	8.36 Mi.
Work-Related Business	7.86	9.75	10.99	10.48	9.63
Family and Personal Business					
Shopping	4.10	4.50	4.33	6.05	4.91
Other Family/Personal Business	5.53	5.92	5.61	6.71	6.13
Civic/Educational/Religious	4.32	5.21	5.85	6.08	5.35
Social and Recreational					
Vacation/Pleasure Driving	21.37	19.04	31.94	17.66	20.15
Visit Friends/Relatives	7.95	8.37	7.78	8.91	8.39
Other Social/Recreational	6.68	6.14	7.86	7.84	7.21
Other	3.74	10.26	4.40	6.25	5.76
All	6.05 Mi.	7.02 Mi.	7.10 Mi.	7.68 Mi.	6.98 Mi.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 2-2 (Continued)
Average Trip Length by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	8.18 Mi.	10.54 Mi.	11.04 Mi.	11.62 Mi.	10.50 Mi.
Work-Related Business	8.71	8.59	8.70	9.82	9.16
Family and Personal Business					
Shopping	4.08	4.19	4.37	6.06	4.91
Other Family/Personal Business	5.27	6.30	5.94	7.25	6.38
Civic/Educational/Religious	5.79	6.72	6.56	7.57	6.79
Social and Recreational					
Vacation/Pleasure Driving	22.83	15.89	23.33	19.90	20.59
Visit Friends/Relatives	7.92	9.12	9.37	9.37	8.96
Other Social/Recreational	7.17	8.28	8.59	9.10	8.37
Other	5.94	9.18	8.38	7.17	7.44
All	6.40 Mi.	7.58 Mi.	7.76 Mi.	8.63 Mi.	7.74 Mi.

Note: Excludes trips greater than 75 miles.

TABLE 2-3
Vehicle Miles of Travel by Mode and Urban Size Group

1990

Travel Mode	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Auto	79.85%	79.18%	88.17%	71.83%	77.79%
Passenger Van	4.83	4.81	4.38	5.02	4.83
Pickup/Other Truck	13.81	15.41	6.02	21.83	16.15
Other PDV	1.50	0.60	1.43	1.32	1.23
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total VMT (in Millions)	230,907	243,323	216,618	513,607	1,204,454

Note: Excludes trips greater than 75 miles.

TABLE 2-4
Commute Vehicle Miles of Travel by Trip Length and Urban Size Group

1990

Trip Length	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< .5 Mile	0.14%	0.09%	0.10%	0.11%	0.11%
1 Mile	0.99	0.62	0.64	0.77	0.75
2 Miles	2.51	1.48	1.52	1.50	1.68
3 Miles	4.03	2.44	2.05	2.02	2.47
4 Miles	3.13	1.66	1.88	1.48	1.89
5 Miles	6.70	4.12	3.81	3.34	4.19
6 Miles	3.68	2.32	1.98	1.71	2.24
7 Miles	4.32	3.06	2.97	2.73	3.13
8 to 10 Miles	18.23	13.86	12.66	9.68	12.66
11 to 15 Miles	19.67	19.27	16.82	14.91	17.05
16 to 20 Miles	10.47	16.84	13.10	13.38	13.54
21 to 30 Miles	10.75	19.78	18.70	18.99	17.64
31 to 40 Miles	6.86	7.30	11.65	12.64	10.29
41 to 50 Miles	4.70	4.46	6.95	8.31	6.59
51 to 75 Miles	3.82	2.70	5.16	8.45	5.77
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total VMT (in Millions)	76,421	91,714	84,186	179,533	431,853

Note: Excludes trips greater than 75 miles.

TABLE 2-5
Average Commute Trip Length and Occupancy by Household Income
(Urbanized Area Households)

1983

Annual Household Income	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
< \$5,000	6.00 Mi.	7.31 Mi.	1.23	2.70%	2.20%	10.60%
\$5,000 to 9,999	6.40	6.64	1.20	6.20	4.20	15.00
\$10,000 to 14,999	6.23	6.30	1.16	11.20	7.60	13.90
\$15,000 to 19,999	6.67	6.94	1.16	11.90	10.40	11.70
\$20,000 to 24,999	8.13	8.18	1.23	14.10	14.40	11.50
\$25,000 to 29,999	8.72	8.48	1.20	11.90	13.10	9.40
\$30,000 to 34,999	8.71	8.64	1.21	9.80	10.70	7.30
\$35,000 to 39,999	8.42	8.36	1.10	8.00	8.90	5.30
\$40,000 to 44,999	8.77	8.55	1.20	7.40	8.40	4.30
\$45,000 to 49,999	9.45	9.76	1.11	3.70	4.60	2.60
\$50,000 to 54,999	9.47	9.29	1.20	3.30	4.20	2.40
\$55,000 to 59,999	7.61	7.69	1.11	2.30	2.50	1.40
\$60,000 to 64,999	7.16	7.54	1.18	1.20	1.20	0.80
\$65,000 to 69,999	9.64	10.50	1.14	1.30	1.80	0.80
\$70,000 to 74,999	8.92	9.16	1.20	1.10	1.60	0.70
\$75,000 to 79,999	9.67	8.56	1.15	1.20	1.20	0.60
\$80,000 +	9.00	8.04	1.08	2.60	3.10	1.80
All/Total	7.91 Mi.	8.00 Mi.	1.18	100.00%	100.00%	100.00%

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	29,586	180,738	56
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¹HH = Households
N/A = not applicable.
1983 figures have not been adjusted to 1990 dollars.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 2-5 (Continued)
Average Commute Trip Length and Occupancy by Household Income
(Urbanized Area Households)

1990

Annual Household Income	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
< \$5,000	7.01 Mi.	8.72 Mi.	1.13	1.10 %	0.70 %	3.80 %
\$5,000 to 9,999	9.89	7.71	1.23	3.80	2.20	8.80
\$10,000 to 14,999	6.53	6.53	1.12	4.80	2.80	8.70
\$15,000 to 19,999	7.56	7.73	1.16	7.40	5.40	9.10
\$20,000 to 24,999	7.61	7.74	1.08	7.50	5.80	8.20
\$25,000 to 29,999	9.25	9.89	1.09	8.90	8.60	9.60
\$30,000 to 34,999	8.24	8.97	1.09	9.10	8.30	8.50
\$35,000 to 39,999	9.50	9.64	1.10	9.00	9.30	7.90
\$40,000 to 44,999	10.61	11.13	1.13	6.90	8.00	5.30
\$45,000 to 49,999	9.18	9.13	1.12	6.80	6.60	5.20
\$50,000 to 54,999	11.38	11.56	1.12	6.20	7.90	4.80
\$55,000 to 59,999	11.97	11.85	1.11	5.90	7.60	4.20
\$60,000 to 64,999	10.74	10.97	1.12	3.60	4.20	2.60
\$65,000 to 69,999	11.10	10.85	1.12	4.40	5.00	2.90
\$70,000 to 74,999	10.19	9.99	1.17	2.70	3.10	1.80
\$75,000 to 79,999	11.44	12.21	1.20	2.10	2.80	1.60
\$80,000 +	11.29	11.28	1.08	9.80	11.90	7.10
All/Total	9.59 Mi.	9.82 Mi.	1.12	100.00 %	100.00 %	100.00 %

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	24,237 ²	195,516 ²	42 ²
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¹HH = Households

²Excludes households with missing income value.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 2-6
Average Commute Trip Length and Occupancy by Household Size
(Urbanized Area Households)

1983

Persons per Household	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
One	7.03 Mi.	7.21 Mi.	1.08	10.60%	9.50%	24.70%
Two	7.58	7.83	1.13	26.40	25.70	31.60
Three	8.04	7.74	1.15	21.10	21.10	16.40
Four	8.21	8.34	1.21	24.20	25.90	16.10
Five +	8.39	8.62	1.32	17.80	17.90	11.20
All/Total	7.91 Mi.	8.00 Mi.	1.18	100.00%	100.00%	100.00%

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	29,586	180,738	56
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¹HH = Households
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Persons per Household	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
One	8.15 Mi.	8.86 Mi.	1.04	12.10%	10.50%	25.30%
Two	9.89	10.10	1.09	29.30	30.60	31.70
Three	9.43	9.52	1.12	21.50	21.10	17.30
Four	9.77	10.07	1.15	20.40	21.60	14.70
Five +	9.84	10.12	1.14	16.80	16.20	11.00
All/Total	9.55 Mi.	9.83 Mi.	1.11	100.00%	100.00%	100.00%

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	31,584	252,320	59
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¹HH = Households
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 2-7
Average Commute Trip Length and Occupancy by Household Vehicles
(Urbanized Area Households)

1983

Household Vehicles	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
Zero	6.02 Mi.	6.38 Mi.	1.24	4.70%	0.10%	15.70%
One	7.54	7.44	1.26	24.70	21.20	36.10
Two	7.97	8.18	1.15	39.70	43.70	32.50
Three	8.34	8.22	1.16	19.70	22.10	10.90
Four	8.73	8.43	1.14	7.00	8.30	3.00
Five	8.62	7.99	1.07	2.10	2.50	1.20
Six	7.37	6.51	1.02	1.50	1.40	0.40
Seven +	9.54	7.70	1.53	0.70	0.80	0.20
All/Total	7.91 Mi.	8.00 Mi.	1.18	100.00%	100.00%	100.00%
Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	29,586	180,738	56

¹HH = Households

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 2-7 (Continued)
Average Commute Trip Length and Occupancy by Household Vehicles
(Urbanized Area Households)

1990

Household Vehicles	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
Zero	6.32 Mi.	9.27 Mi.	1.05	4.10 %	0.30 %	10.90 %
One	8.24	8.19	1.14	23.70	17.10	34.70
Two	10.09	10.20	1.11	45.50	51.20	37.70
Three	10.06	10.09	1.09	18.10	20.80	11.90
Four	10.47	10.50	1.10	5.70	6.70	3.30
Five	11.24	11.53	1.05	2.30	3.20	1.10
Six	11.20	12.11	1.06	0.50	0.60	0.30
Seven +	11.34	11.23	1.05	0.10	0.20	0.10
All/Total	9.55 Mi.	9.83 Mi.	1.11	100.00 %	100.00 %	100.00 %

Commute Trips, VMT, and HH¹ (in Millions)	N/A	N/A	N/A	31,584	252,320	59
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¹HH = Households
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 2-8
Average Commute Trip Length and Occupancy by Household Vehicles per Driver
(Urbanized Area Households)

1983

Vehicles Per Driver	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
0	6.47 Mi.	5.00 Mi.	2.00	2.80 %	0.00 %	5.70 %
< .5	7.54	7.09	1.26	0.90	0.60	0.80
.5 - .99	7.81	8.20	1.35	18.20	15.60	16.10
1 - 1.49	8.01	7.84	1.14	62.30	64.90	63.10
1.5 - 1.99	8.00	8.17	1.16	9.80	11.70	6.80
2 +	8.57	9.00	1.20	6.10	7.10	7.50
All/Total	7.96 Mi.	8.00 Mi.	1.18	100.00 %	100.00 %	100.00 %

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	28,899	180,296	49
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¹HH = Households
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Vehicles Per Driver	Average Trip Length (All Modes)	Average Trip Length (POV)	Average Occupancy (POV)	Percent of All Commute Trips	Percent of All Commute VMT	Percent of All Households
0	6.68 Mi.	* Mi.	*	2.30 %	0.20 %	4.20 %
< .5	8.17	5.76	1.18	0.90	0.30	0.60
.5 - .99	8.53	8.69	1.17	14.10	10.40	11.30
1 - 1.49	9.63	9.84	1.10	61.70	64.80	60.50
1.5 - 1.99	10.60	10.75	1.10	8.50	10.40	6.00
2 +	10.35	10.28	1.12	12.50	14.00	17.40
All/Total	9.56 Mi.	9.83 Mi.	1.11	100.00 %	100.00 %	100.00 %

Commute Trips, VMT, and HH ¹ (in Millions)	N/A	N/A	N/A	30,791	252,094	52
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¹HH = Households
N/A = not applicable.
* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 2-9
Vehicle Miles of Travel by Trip Purpose and Gender of Driver
(Urbanized Area Households)

1983

Gender of Driver

Trip Purpose	Male	Female	All
Earning a Living			
To or From Work	41.39%	27.11%	35.11%
Work-Related Business	5.18	2.07	3.81
Family and Personal Business			
Shopping	9.78	17.51	13.18
Other Family/Personal Business	14.62	18.87	16.48
Civic/Educational/Religious	4.11	5.03	4.52
Social and Recreational			
Vacation/Pleasure Driving	2.14	1.06	1.67
Visit Friends/Relatives	9.91	13.44	11.46
Other Social/Recreational	12.25	13.35	12.73
Other	0.62	1.56	1.03
Total	100.00%	100.00%	100.00%
Total VMT (in Millions)	288,516	226,270	514,787

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 2-9 (Continued)
Vehicle Miles of Travel by Trip Purpose and Gender of Driver
(Urbanized Area Households)

1990

Gender of Driver

Trip Purpose	Male	Female	All
Earning a Living			
To or From Work	39.70%	32.21%	36.52%
Work-Related Business	2.48	1.19	1.93
Family and Personal Business			
Shopping	9.92	14.70	11.95
Other Family/Personal Business	17.27	23.40	19.87
Civic/Educational/Religious			
	4.02	5.40	4.61
Social and Recreational			
Vacation/Pleasure Driving	1.03	0.43	0.78
Visit Friends/Relatives	10.11	11.78	10.82
Other Social/Recreational	14.76	10.29	12.86
Other			
	0.70	0.59	0.65
Total	100.00%	100.00%	100.00%
Total VMT (in Millions)	397,968	292,793	690,761

Note: Excludes trips greater than 75 miles.

TABLE 2-10
Person Trips and Vehicle Miles of Travel by Trip Purpose
Residence Inside or Outside the Central City
(Urbanized Area Households)

1990

Trip Purpose	Person Trips		VMT	
	Inside	Outside	Inside	Outside
Earning a Living				
To or From Work	20.59%	21.32%	35.07%	37.99%
Work-Related Business	1.25	1.28	1.85	2.01
Family and Personal Business				
Shopping	19.36	19.29	11.99	11.90
Other Family/Personal Business	21.95	21.61	21.28	18.45
Civic/Educational/Religious	11.36	10.71	4.54	4.68
Social and Recreational				
Vacation/Pleasure Driving	0.28	0.41	0.73	0.82
Visit Friends/Relatives	10.17	9.17	11.00	10.63
Other Social/Recreational	14.39	15.49	12.95	12.77
Other	0.62	0.71	0.57	0.74
Total	100.00%	100.00%	100.00%	100.00%
Person Trips/Total VMT (in Millions)	85,373	65,697	347,574	343,273

Note: Excludes trips greater than 75 miles.

TABLE 2-11
Commute Vehicle Miles of Travel by Trip Length and Gender of Driver
(Urbanized Area Households)

1990

Gender of Driver

Trip Length	Male	Female	All
< .5 Mile	0.08%	0.16%	0.11%
1 Mile	0.56	1.03	0.74
2 Miles	1.41	2.46	1.80
3 Miles	2.36	3.52	2.79
4 Miles	1.84	2.75	2.18
5 Miles	3.98	6.18	4.80
6 Miles	2.21	3.31	2.62
7 Miles	2.74	4.54	3.41
8 to 10 Miles	13.15	17.49	14.77
11 to 15 Miles	17.63	20.18	18.58
16 to 20 Miles	14.72	11.90	13.67
21 to 30 Miles	19.10	12.64	16.69
31 to 40 Miles	9.11	7.80	8.62
41 to 50 Miles	6.10	4.14	5.36
51 to 75 Miles	5.03	1.91	3.86
Total	100.00%	100.00%	100.00%
Commute VMT (in Millions)	157,986	94,295	252,280

Note: Excludes trips greater than 75 miles.

Chapter 3

Trip Length in Distance and Time

This chapter discusses average lengths and distribution of trip length. Trip length is examined both in time and distance. The major focus is on trips to and from work. Other variables examined include mode of travel, vehicle occupancy rates, gender of travelers, urban area size, and location in urbanized and metropolitan areas. Comparisons are made between 1983 and 1990 survey data.

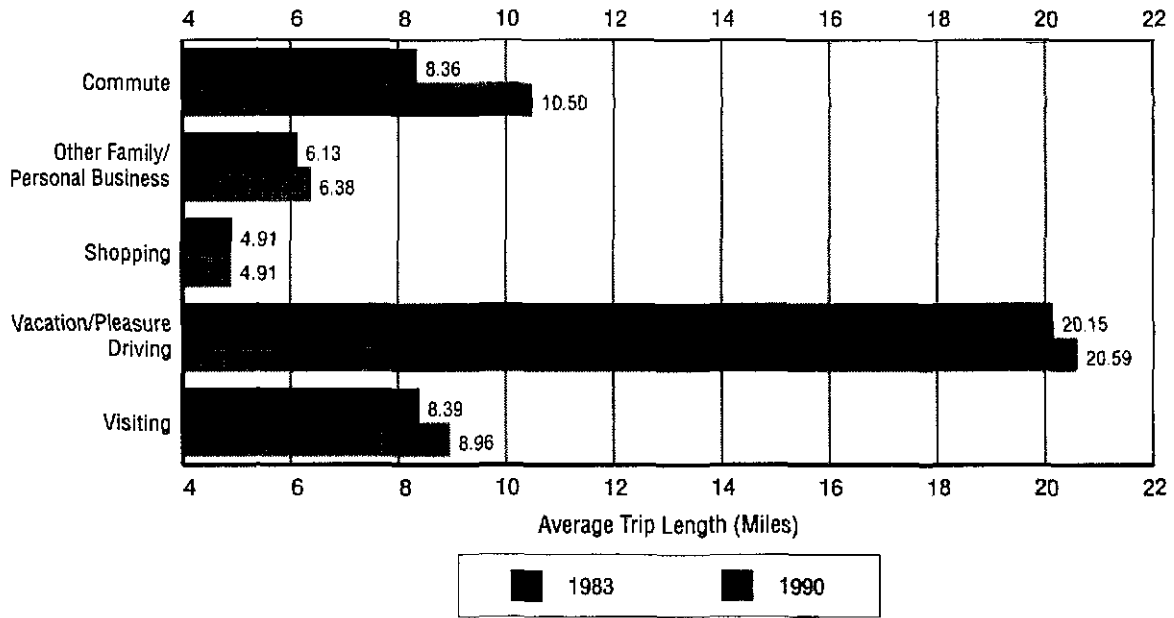
The information is for trips of 75 miles or less.

Key Findings

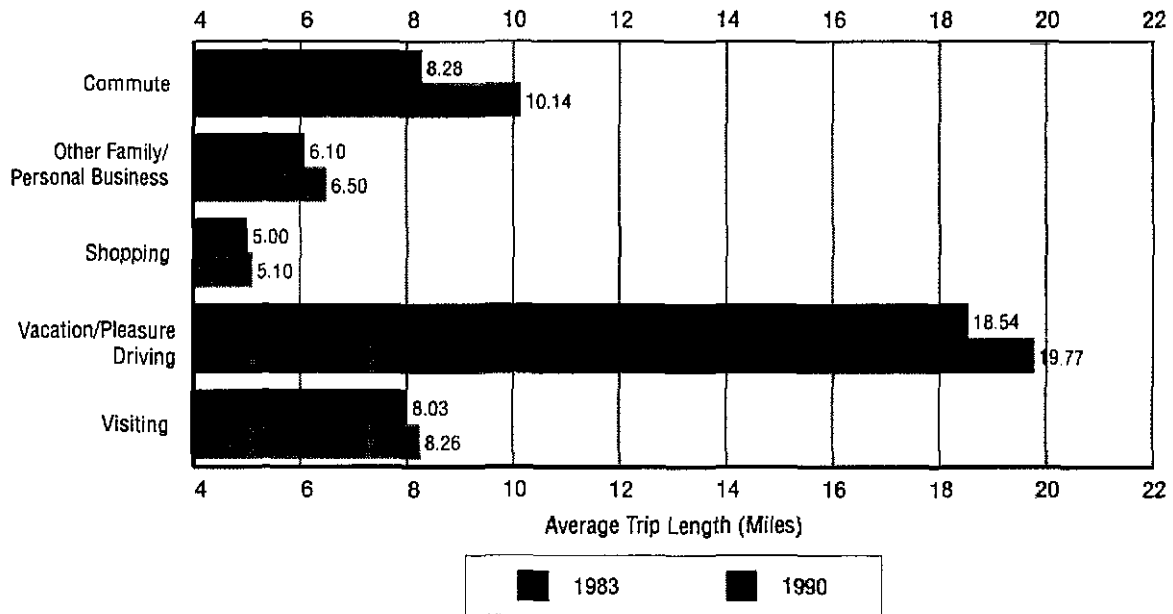
- The average length of trip in 1990 was 7.27 miles, up by 0.58 mile from 1983. The average 1990 rural trip was longer than the average urban trip.
- The average commute trip in 1990 took 18.9 minutes. The shortest average commute time was in small urban areas; the longest was in large urban areas with rail transit.
- Although the average length in distance of trips to and from work increased 22.4 percent from 1983 to 1990, the average commuting time increased only 6.4 percent. These facts indicate that the average speed of commuting trips increased.
- The proportion of commute trips of 8 miles or longer increased, while the proportion of trips of 1 mile or less decreased. Intermediate-range commute trips remained relatively constant.
- Except for walking and taxi travel modes, commuting by auto took the least amount of time among the other travel modes. The average rail trip to and from work was the longest in terms of both travel time and trip length.
- Although the average commuting trip by bus transit and private vehicle are similar in distance, the bus trip takes nearly twice as much time.

FIGURE 3-1
Average Trip Length by Trip Purpose

Privately Operated Vehicles



All Modes



Note: Excludes trips greater than 75 miles.

Trip Lengths are Increasing

As shown in Table 3-1, the average length of a 1990 trip (7.27 miles) was 9 percent greater than the average length of a 1983 trip (6.69 miles).

Average trip lengths for all modes, as displayed in Table 3-1, are marginally less than the average of trips in privately operated vehicles, as displayed in Table 3-2. This is due to both the predominance of private vehicle travel, as discussed in Chapters 1 and 2, and the shorter trip lengths of bus, taxi, bicycle, and walking modes, as displayed in Table 3-3.

Major Increase in Commute Distance

Except for work-related business travel, all other types of trips increased in distance from the 1983 to 1990 period. The average trip to and from work by all modes increased the most, from 8.28 miles to 10.14 miles, or 22.4 percent, as people continue to locate their homes farther from their job sites. Commute trips by POV increased by 25.6 percent. Figure 3-1 shows the 1983 to 1990 changes.

Commute Trips Average over 10 Miles

Table 3-2 focuses exclusively on 1983 and 1990 trips by privately operated vehicles. The length of the average commuting trip in 1990 was 10.5 miles. This average distance was second longest of the nine basic types of 1990 trips by POVs. The shortest was the 4.91 mile shopping trip.

Most types of POV trips increased in distance over the 1983 to 1990 period. Shopping trips remained at 4.91 miles, an indication that retail establishments are decentralizing in pace with people and their homes.

Rail Trips the Longest; Walking the Shortest

At 14.68 miles, the average 1990 rail/subway trip was almost twice the length of the average trip by private vehicle, at 7.89 miles. Rail trips in Table 3-3 include subway and elevated rail transit trips, and commuter railroad trips. Trips by bus were only 0.97 mile shorter than trips by private vehicle. Walking trips averaged just under two-thirds of a mile (0.64 mile).

Shorter Trips in Small Urban Places; Longer in Rural Areas

As shown in Figure 3-2 and Tables 3-1 and 3-2, the average trip by residents of urban places of fewer than 1 million population is shorter in distance than the average of the Nation. Conversely, the average length of a trip by rural residents is longer than the average of the Nation.

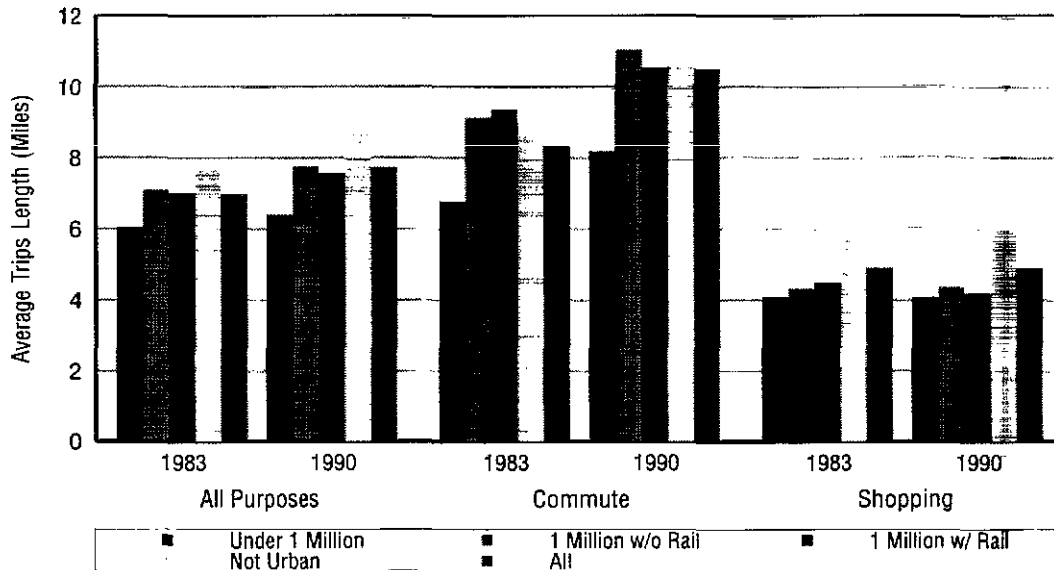
Males Make Longer Trips

Table 3-4 shows the differences in 1983 and 1990 trip lengths of male and female residents of urbanized areas. The greatest difference is in 1990 private vehicle trips, where the average trip for males (8.10 miles) was 29.8 percent longer than the average trip for females (6.24 miles). Furthermore, each trip purpose shows the same pattern, with men traveling longer distances than women.

There was little difference by gender in average shopping trip distance (0.36 mile). For trips to and from work, however, males drove 2.70 miles farther than females on average.

Although both the average male and female trips increased in distance from 1983 to 1990, the average male trip grew at a faster rate for

FIGURE 3-2
Average Trip Length by Trip Purpose
(Urban Size Group)



Note: Excludes trips greater than 75 miles.

both all-mode and POV travel. Table 3-4 shows that while the average male trip in privately operated vehicles increased by 0.85 mile, or 11.7 percent, the average female private vehicle trip increased 0.40 mile, or 6.8 percent.

Urban Size Influences Commuting Trip Distance

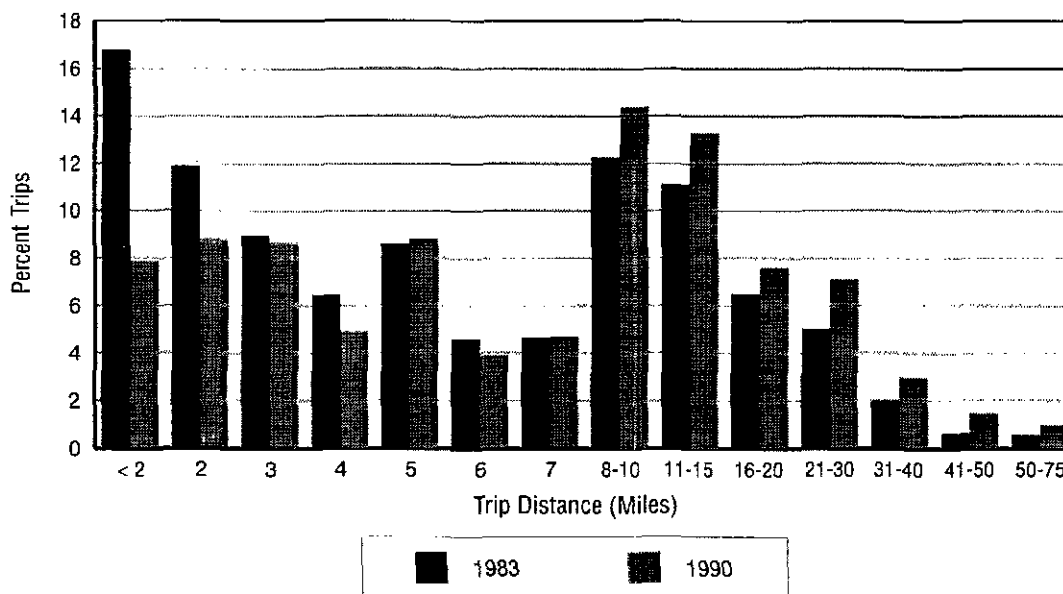
The influence of urban size on commuting trip distance in privately operated vehicles is shown in Table 3-5. About one-third (33.75 percent) of trips by residents of urban areas under 1 million population were 3 miles or fewer than in 1990. In the larger urban groups, trips of 3 miles or fewer were only 27.41 percent of the trips for the group with rail service and only 26.61 percent for the group without rail service.

Conversely, only 10.75 percent of the trips by residents of smaller urban areas were more than 16 miles, while such trips represented 21.83 percent of all trips for the urban group with rail service and 20.99 percent for the urban areas without rail service.

Most Commuting VMT is Generated by Long Trips

Figure 3-3 and Table 3-6 show the proportions of total VMT by 15 groupings of commute trip distance. Trips of more than 8 miles account for 83.5 percent of 1990 commute VMT. This percentage would be higher if trips of more than 75 miles had not been excluded from this analysis.

FIGURE 3-3
Vehicle Commute Trips by Trip Length
(Privately Operated Vehicles)



Note: Excludes trips greater than 75 miles.

Commuting by Rail/Subway is Longest

As shown in Table 3-7, the average rail commute was 16.90 miles, or 66.7 percent longer than the 10.14 mile average for all commuting trips by all modes.

When compared with the data in Table 3-3, it is apparent that commuting trips are generally longer than the average of all trips. For example, the average rail commuting trip of 16.90 miles is 2.22 miles longer than the average of all types of rail trips.

Table 3-7 also demonstrates that residents of smaller urban areas generally have shorter distance commute trips than residents of areas with more than 1 million population.

Passenger Van Commuting is Longer Than Auto Commuting

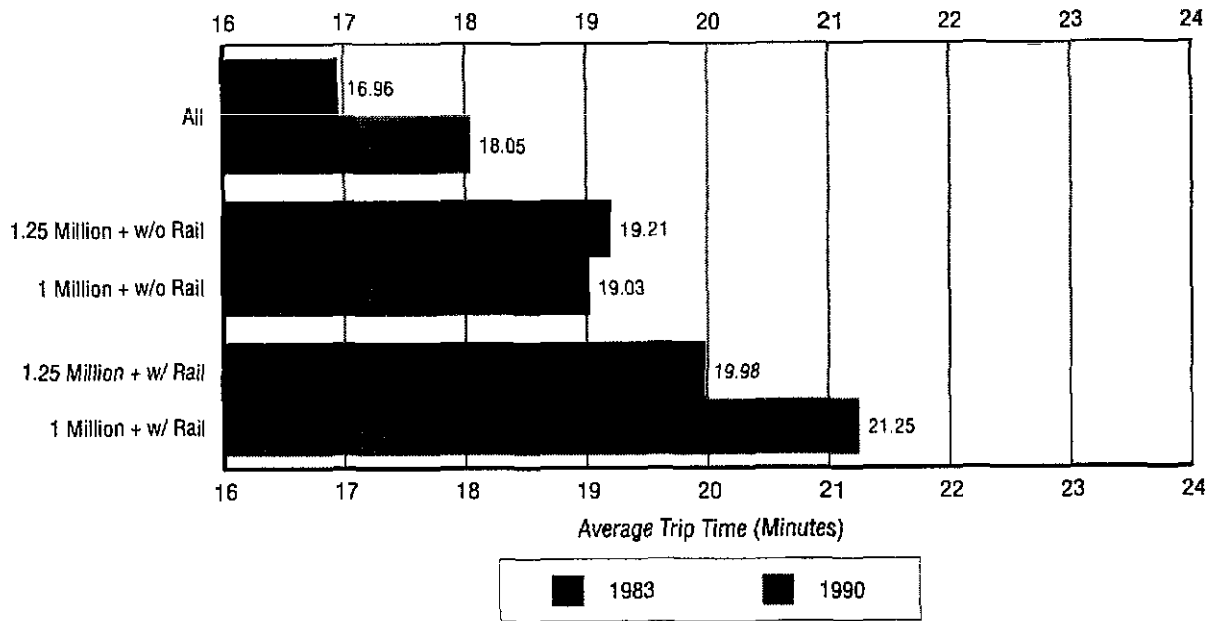
Table 3-8 shows that at 11.04 miles, the average commute trip in a passenger van was almost 1 mile (0.96 mile) longer than the average trip in an automobile. Table 3-8 also shows that trips in vanpools with five or more occupants are likely to be considerably longer than trips in carpools with five or more occupants.

Commuting Time Increased 6 Percent

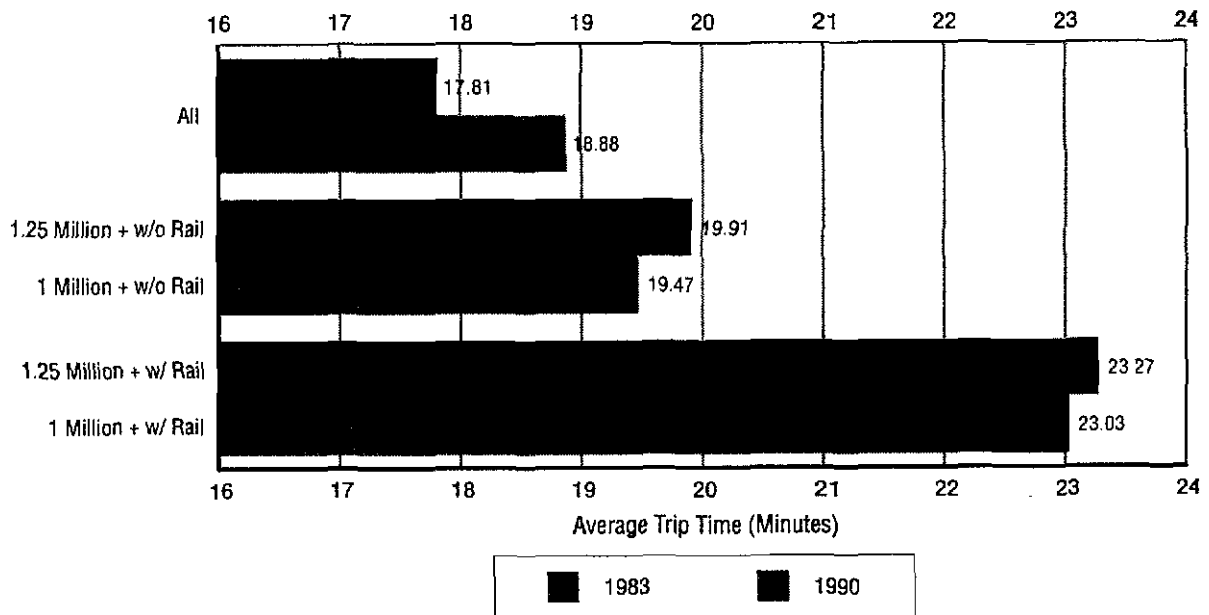
For the Nation as a whole, the average commute increased by 1.1 minutes, from 17.8 minutes in 1983 to 18.9 minutes in 1990 (Figure 3-4 and Table 3-13). This is an increase of 6.0 percent, less than the 22.4 percent average commuting trip length increase (Table 3-1). Therefore, the

FIGURE 3-4
Average Travel Time for Commute Trips

Privately Operated Vehicles



All Modes



Note: Excludes trips greater than 75 miles.

speed of commuting travel improved over the 1983 to 1990 period.

Although the average commuting time increased nationwide, the average commuting times in large urban areas stayed nearly the same. In large urban areas with rail service, there was only a 14-second decrease in commuting times between 1983 and 1990; in large urban areas without rail service, there was a 26-second decrease. These findings counter prevailing public opinion that commuting travel times are getting longer.

The longest commuting time in 1990 was by rail. At an average of 46.7 minutes, rail commuting was almost 1.5 times longer in duration than the 18.9 minute average commute time for all modes (Table 3-13). This is due to the longer average trip length (Table 3-7).

Bus commuting in 1990 took an average of 36.2 minutes. Walking to work took the least amount of time, 9.8 minutes.

Bus Commuting has a Time Handicap

Tables 3-7 and 3-13 show that although commute trips by POV and buses are similar in distance (10.95 miles for auto drivers and 9.85 miles for bus riders in areas with rail service), the travel times differ widely (21 minutes for the auto driver and passenger and 39.3 minutes for the bus rider). This difference in travel time may be an important reason why bus commuting is less attractive than auto commuting.

Table 3-14 compares commuting time for driving alone and carpooling. In general, carpooling means a somewhat longer commute time.

Commuting in POVs takes less time than in transit vehicles, regardless of the length of trip and the size of urban area. For example, for commute trips of 8 to 10 miles in large metropolitan areas with rail service, the POV trip time averaged 19.8 minutes, compared with 46.7 minutes by transit. For commute trips of 4 to 5 miles in large metropolitan areas without rail service, the POV trip time was 12.4 minutes, compared with 29.1 minutes by transit.

Economy of Scale in Commuting Time

As trip length increases, trip speed increases. Table 3-15, for example, indicates that commuting trips of between 8 and 10 miles take an average of 18.5 minutes, but that trips six to seven times longer (51 to 75 miles) are only about four times the duration of the 8 to 10 mile trip.

Income is Only a Minor Factor in Predicting Commuting Time

Household income has little, if any, relationship to commuting time for urban areas under 1 million population. Even in the larger urban areas, commuting travel time increases only marginally with household income (Table 3-18).

Consistent with the finding that males make longer trips than females (Table 3-4) is the finding that males spend more time commuting than females (Table 3-19).

TABLE 3-1
Average Trip Length by Trip Purpose and Urban Size Group
(All Modes)

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	6.57 Mi.	9.19 Mi.	8.95 Mi.	8.94 Mi.	8.28 Mi.
Work-Related Business	6.90	10.03	9.71	11.78	9.78
Family and Personal Business					
Shopping	4.40	4.36	4.04	6.26	5.00
Other Family/Personal Business	5.28	5.62	5.67	6.99	6.10
Civic/Educational/Religious	3.49	3.92	4.13	5.67	4.49
Social and Recreational					
Vacation/Pleasure Driving	18.82	15.03	26.30	19.36	18.54
Visit Friends/Relatives	7.07	7.74	6.91	9.34	8.03
Other Social/Recreational	6.26	6.12	7.35	8.09	7.07
Other	4.49	8.80	4.70	6.86	6.11
All	5.65 Mi.	6.47 Mi.	6.51 Mi.	7.71 Mi.	6.69 Mi.

Note: Excludes trips greater than 75 miles.

TABLE 3-1 (Continued)
Average Trip Length by Trip Purpose and Urban Size Group
(All Modes)

1990

Trip Purpose	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
Earning a Living					
To or From Work	7.95 Mi.	10.20 Mi.	10.54 Mi.	11.20 Mi.	10.14 Mi
Work-Related Business	8.59	8.13	8.47	10.44	9.25
Family and Personal Business					
Shopping	4.18	4.15	4.11	6.73	5.10
Other Family/Personal Business	5.46	6.38	5.71	7.49	6.50
Civic/Educational/Religious	4.46	4.70	3.93	5.85	4.95
Social and Recreational					
Vacation/Pleasure Driving	22.92	15.04	20.24	19.79	19.77
Visit Friends/Relatives	7.25	8.48	8.16	8.88	8.26
Other Social/Recreational	7.25	7.47	7.67	8.98	8.00
Other	5.32	7.93	5.68	7.24	6.70
All	6.15 Mi.	6.98 Mi.	6.88 Mi.	8.31 Mi.	7.27 Mi.

Note: Excludes trips greater than 75 miles.

TABLE 3-2
Average Trip Length by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	6.78 Mi.	9.36 Mi.	9.13 Mi.	8.99 Mi.	8.36 Mi.
Work-Related Business	7.86	9.75	10.99	10.48	9.63
Family and Personal Business					
Shopping	4.10	4.50	4.33	6.05	4.91
Other Family/Personal Business	5.53	5.92	5.61	6.71	6.13
Civic/Educational/Religious	4.32	5.21	5.85	6.08	5.35
Social and Recreational					
Vacation/Pleasure Driving	21.37	19.04	31.94	17.66	20.15
Visit Friends/Relatives	7.95	8.37	7.78	8.91	8.39
Other Social/Recreational	6.68	6.14	7.86	7.84	7.21
Other	3.74	10.26	4.40	6.25	5.76
All	6.05 Mi.	7.02 Mi.	7.10 Mi.	7.68 Mi.	6.98 Mi.

Note: Excludes trips greater than 75 miles.

TABLE 3-2 (Continued)
Average Trip Length by Trip Purpose and Urban Size Group
(Privately Operated Vehicles)

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	8.18 Mi.	10.54 Mi.	11.04 Mi.	11.62 Mi.	10.50 Mi.
Work-Related Business	8.71	8.59	8.70	9.82	9.16
Family and Personal Business					
Shopping	4.08	4.19	4.37	6.06	4.91
Other Family/Personal Business	5.27	6.30	5.94	7.25	6.38
Civic/Educational/Religious	5.79	6.72	6.56	7.57	6.79
Social and Recreational					
Vacation/Pleasure Driving	22.83	15.89	23.33	19.90	20.59
Visit Friends/Relatives	7.92	9.12	9.37	9.37	8.96
Other Social/Recreational	7.17	8.28	8.59	9.10	8.37
Other	5.94	9.18	8.38	7.17	7.44
All	6.40 Mi.	7.58 Mi.	7.76 Mi.	8.63 Mi.	7.74 Mi.

Note: Excludes trips greater than 75 miles.

TABLE 3-3
Average Trip Length by Mode and Urban Size Group
(All Purposes)

1990

Travel Mode	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Privately Operated Vehicle	6.60 Mi.	7.54 Mi.	7.83 Mi.	8.87 Mi.	7.89 Mi.
Bus ¹	5.57	7.52	6.86	9.00	7.00
Rail/Subway ¹	*	*	14.91	*	14.68
Taxi	2.23	*	4.75	5.44	4.62
Bicycle	1.81	1.65	1.85	2.45	1.99
Walk	0.67	0.67	0.66	0.58	0.64
Other	4.88	4.64	3.95	6.83	5.68
All	6.15 Mi.	6.98 Mi.	6.88 Mi.	8.31 Mi.	7.27 Mi.

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-4
Average Trip Length and Occupancy by Trip Purpose and Gender
 (Urbanized Area Households)

1983

Trip Purpose	Average Trip Length (All Modes)			Average Trip Length (POV)			Average Number of Occupants (POV)		
	Male	Female	All	Male	Female	All	Male ¹	Female ¹	All ¹
Earning a Living									
To or From Work	8.71 Mi.	6.80 Mi.	7.91 Mi.	8.78 Mi.	6.83 Mi.	8.00 Mi.	1.16	1.20	1.18
Work-Related Business	10.10	6.01	8.47	11.03	5.75	9.05	1.27	1.37	1.31
Family and Personal Business									
Shopping	4.32	4.28	4.30	4.11	4.34	4.24	1.47	1.59	1.54
Other Family/Personal Business	6.05	5.10	5.52	6.41	5.21	5.75	1.48	1.69	1.60
Civic/Educational/Religious	4.09	3.53	3.78	5.58	4.39	4.93	1.62	1.81	1.72
Social and Recreational									
Vacation/Pleasure Driving	19.76	16.55	18.09	21.95	19.64	21.25	2.31	3.01	2.52
Visit Friends/Relatives	7.18	7.22	7.20	8.20	7.88	8.03	1.67	1.81	1.74
Other Social/Recreational	6.44	6.50	6.47	6.99	6.67	6.84	1.87	2.07	1.96
Other	5.12	5.99	5.58	3.95	6.75	5.45	1.55	1.77	1.67
All	6.60 Mi.	5.59 Mi.	6.08 Mi.	7.25 Mi.	5.84 Mi.	6.55 Mi.	1.44	1.62	1.53

¹Gender of driver only considered.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 3-4 (Continued)
Average Trip Length and Occupancy by Trip Purpose and Gender
 (Urbanized Area Households)

1990

Trip Purpose	Average Trip Length (All Modes)			Average Trip Length (POV)			Average Number of Occupants (POV)		
	Male	Female	All	Male	Female	All	Male ¹	Female ¹	All ¹
Earning a Living									
To or From Work	10.57 Mi.	8.10 Mi.	9.55 Mi.	11.02 Mi.	8.32 Mi.	9.83 Mi.	1.10	1.12	1.11
Work-Related Business	9.58	6.48	8.40	9.82	6.50	8.67	1.28	1.23	1.26
Family and Personal Business									
Shopping	4.17	4.13	4.15	4.40	4.04	4.20	1.49	1.49	1.49
Other Family/Personal Business	6.34	5.47	5.84	6.51	5.24	5.81	1.58	1.70	1.65
Civic/Educational/Religious	4.39	4.34	4.37	6.71	5.91	6.29	1.77	1.64	1.70
Social and Recreational									
Vacation/Pleasure Driving	20.22	19.12	19.75	22.55	18.09	21.30	1.81	2.34	1.95
Visit Friends/Relatives	7.97	7.84	7.90	9.00	8.39	8.71	1.59	1.47	1.53
Other Social/Recreational	7.79	7.10	7.46	8.52	7.09	7.97	1.92	1.85	1.90
Other	6.72	5.85	6.32	8.25	6.77	7.62	1.52	1.43	1.48
All	7.32 Mi.	6.04 Mi.	6.65 Mi.	8.10 Mi.	6.24 Mi.	7.19 Mi.	1.48	1.49	1.49

¹Gender of driver only considered.

Note: Excludes trips greater than 75 miles.

TABLE 3-5
Commute Vehicle Trips by Trip Length and Urban Size Group
(Privately Operated Vehicles)

1983

Trip Length	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
< .5 Mile	4.34 %	4.93 %	5.00 %	10.91 %	6.94 %
1 Mile	9.81	7.54	8.85	11.24	9.85
2 Miles	13.59	10.22	11.01	11.11	11.89
3 Miles	12.37	6.34	6.66	8.05	8.95
4 Miles	7.90	4.85	6.14	5.85	6.45
5 Miles	10.76	8.91	8.03	6.85	8.59
6 Miles	4.62	4.68	4.82	4.37	4.59
7 Miles	5.80	4.79	5.40	3.35	4.65
8 to 10 Miles	11.84	16.59	15.11	9.97	12.26
11 to 15 Miles	11.06	12.63	11.66	10.52	11.13
16 to 20 Miles	3.64	9.57	8.45	6.85	6.50
21 to 30 Miles	3.05	6.12	6.28	5.74	5.02
31 to 40 Miles	0.93	2.12	1.59	2.95	1.96
41 to 50 Miles	0.20	0.53	0.55	1.11	0.65
51 to 75 Miles	0.09	0.17	0.43	1.12	0.57
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Average Trip Length	6.78 Mi.	9.36 Mi.	9.13 Mi.	8.99 Mi.	8.36 Mi.
Commute Vehicle Trips (in Millions)	11,504	5,513	5,077	12,722	35,307

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 3-5 (Continued)
Commute Vehicle Trips by Trip Length and Urban Size Group
(Privately Operated Vehicles)

1990

Trip Length	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< .5 Mile	4.44%	3.70%	4.41%	5.03%	4.50%
1 Mile	8.06	6.57	7.07	8.96	7.90
2 Miles	10.27	7.77	8.38	8.70	8.80
3 Miles	10.98	8.57	7.55	7.84	8.65
4 Miles	6.40	4.37	5.18	4.30	4.95
5 Miles	10.97	8.69	8.41	7.75	8.80
6 Miles	5.02	4.07	3.65	3.31	3.92
7 Miles	5.05	4.60	4.69	4.52	4.69
8 to 10 Miles	16.18	15.66	15.14	12.13	14.36
11 to 15 Miles	11.90	15.00	13.69	12.94	13.28
16 to 20 Miles	4.54	9.45	7.66	8.37	7.60
21 to 30 Miles	3.37	7.93	7.96	8.45	7.10
31 to 40 Miles	1.55	2.15	3.59	4.02	2.98
41 to 50 Miles	0.81	0.99	1.68	2.06	1.48
51 to 75 Miles	0.48	0.47	0.94	1.61	0.99
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Average Trip Length	7.74 Mi.	9.76 Mi.	10.52 Mi.	10.87 Mi.	9.86 Mi.
Commute Vehicle Trips (in Millions)	9,344	8,704	7,626	15,457	41,132

Note: Excludes trips greater than 75 miles.

TABLE 3-6
Commute Vehicle Miles of Travel by Trip Length and Urban Size Group

1990

Trip Length	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< .5 Mile	0.14%	0.09%	0.10%	0.11%	0.11%
1 Mile	0.99	0.62	0.64	0.77	0.75
2 Miles	2.51	1.48	1.52	1.50	1.68
3 Miles	4.03	2.44	2.05	2.02	2.47
4 Miles	3.13	1.66	1.88	1.48	1.89
5 Miles	6.70	4.12	3.81	3.34	4.19
6 Miles	3.68	2.32	1.98	1.71	2.24
7 Miles	4.32	3.06	2.97	2.73	3.13
8 to 10 Miles	18.23	13.86	12.66	9.68	12.66
11 to 15 Miles	19.67	19.27	16.82	14.91	17.05
16 to 20 Miles	10.47	16.84	13.10	13.38	13.54
21 to 30 Miles	10.75	19.78	18.70	18.99	17.64
31 to 40 Miles	6.86	7.30	11.65	12.64	10.29
41 to 50 Miles	4.70	4.46	6.95	8.31	6.59
51 to 75 Miles	3.82	2.70	5.16	8.45	5.77
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total VMT (in Millions)	76,421	91,714	84,186	179,533	431,853

Note: Excludes trips greater than 75 miles.

TABLE 3-7
Average Trip Length of Commute Trips by Mode and Urban Size Group

1990

Travel Mode	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Auto Driver	7.89 Mi.	10.03 Mi.	10.95 Mi.	11.35 Mi.	10.18 Mi.
Auto Passenger	8.29	10.12	9.17	8.94	9.12
Passenger Van	9.20	10.31	13.59	11.51	11.03
Pickup/Other Truck Driver	9.27	13.07	11.09	12.38	11.78
Pickup/Other Truck Passenger	7.77	15.01	16.20	16.45	14.22
Other POV	8.62	8.06	24.91	15.75	15.03
Bus ¹	8.22	9.25	9.85	14.28	9.67
Rail/Subway ¹	*	*	17.12	*	16.90
Taxi	*	*	4.28	*	3.48
Bicycle	2.56	1.91	1.52	2.27	2.11
Walk	0.74	0.93	1.08	0.45	0.83
Other	8.05	*	7.20	16.06	11.82
All	7.95 Mi.	10.20 Mi.	10.54 Mi.	11.21 Mi.	10.14 Mi.

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-8
Average Commute Trip Length by Mode, Number of Occupants, and Urban Size Group

1990

Travel Mode	Occupants	Urban Size Group				All
		Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
Auto						
	One	7.93 Mi.	10.08 Mi.	11.10 Mi.	11.44 Mi.	10.25 Mi.
	Two	7.74	10.01	8.78	9.64	9.11
	Three	7.90	8.13	8.71	8.81	8.51
	Four	11.27	9.99	15.96	3.85	12.48
	Five +	9.28	10.03	11.15	11.58	10.56
	All	7.92 Mi.	10.03 Mi.	10.77 Mi.	11.14 Mi.	10.08 Mi.
Passenger Van						
	One	8.98 Mi.	10.92 Mi.	10.57Mi.	10.25 Mi.	10.11 Mi.
	Two	10.68	5.65	26.42	11.11	12.85
	Three	*	*	*	6.94	6.07
	Four	*	*	*	14.36	9.42
	Five +	11.66	*	17.11	30.87	21.84
	All	9.20 Mi.	10.31 Mi.	13.59 Mi.	11.53 Mi.	11.04 Mi.
Other						
	One	7.68 Mi.	10.33 Mi.	9.06 Mi.	10.52 Mi.	9.61 Mi.
	Two	8.61	16.41	16.82	15.60	14.71
	Three	7.27	10.64	8.60	14.38	11.87
	Four	*	*	*	*	2.62
	Five +	11.74	5.41	9.93	32.04	15.67
	All	7.79 Mi.	10.79 Mi.	9.66 Mi.	11.31 Mi.	10.18 Mi.
All Modes						
	One	7.91 Mi.	10.17 Mi.	10.49 Mi.	11.12 Mi.	10.08 Mi.
	Two	7.97	10.80	11.00	11.21	10.39
	Three	7.73	8.54	8.66	10.03	9.14
	Four	8.75	9.19	12.51	13.22	11.17
	Five +	10.91	10.56	12.09	24.58	15.42
	All	7.95 Mi.	10.20 Mi.	10.54 Mi.	11.21 Mi.	10.14 Mi.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-9
Average Commute Trip Length by Residence Location and
Urban Size Group

1983

Urbanized Area Status	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
In Urbanized Area, Central City	6.20 Mi.	8.82 Mi.	8.57 Mi.	N/A	7.13 Mi.
In Urbanized Area, Not Central City	7.08	9.40	9.10	N/A	8.53
Not in Urbanized Area	N/A	N/A	N/A	8.94	8.94
All	6.57 Mi.	9.19 Mi.	8.95 Mi.	8.94 Mi.	8.28 Mi.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Urbanized Area Status	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
In Urbanized Area, Central City	7.35 Mi.	9.55 Mi.	9.50 Mi.	N/A	8.59 Mi.
In Urbanized Area, Not Central City	9.39	11.03	11.25	N/A	10.76
Not in Urbanized Area	N/A	N/A	N/A	11.20	10.22
All	7.95 Mi.	10.20 Mi.	10.54 Mi.	11.20 Mi.	10.14 Mi.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 3-10
Commute Person Trips by Trip Length and Gender
(Urbanized Area Households)

1990

Trip Length	All Modes			Private Vehicles Only		
	Male	Female	All	Male	Female	All
< .5 Mile	6.31%	8.76%	7.42%	3.38%	5.19%	4.18%
1 Mile	7.02	9.15	7.98	6.20	8.61	7.26
2 Miles	7.75	10.02	8.78	7.77	10.24	8.86
3 Miles	8.59	9.48	9.00	8.66	9.76	9.14
4 Miles	4.88	5.73	5.27	5.06	5.72	5.35
5 Miles	8.51	9.37	8.90	8.76	10.29	9.44
6 Miles	3.93	4.28	4.09	4.06	4.59	4.29
7 Miles	4.11	4.95	4.49	4.32	5.39	4.79
8 to 10 Miles	14.48	14.45	14.47	15.67	15.70	15.68
10 to 15 Miles	13.40	11.36	12.47	14.38	12.35	13.49
16 to 20 Miles	7.88	5.30	6.71	8.61	5.25	7.13
21 to 30 Miles	7.66	4.21	6.10	8.02	4.08	6.28
31 to 40 Miles	2.77	1.87	2.36	2.79	1.81	2.36
41 to 50 Miles	1.54	0.77	1.19	1.43	0.75	1.13
51 to 75 Miles	1.17	0.30	0.78	0.90	0.26	0.61
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Average Trip Length	10.75 Mi.	8.10 Mi.	9.55 Mi.	11.13 Mi.	8.32 Mi.	9.86 Mi.
Commute Person Trips (in Millions)	17,262	14,318	31,580	14,338	11,332	25,671

Note: Excludes trips greater than 75 miles.

TABLE 3-11
Average Person Trip Length by Mode and Gender
 (Urbanized Area Households)

1983

Gender

Travel Mode	Male	Female	All
Auto	8.86 Mi.	6.93 Mi.	7.99 Mi.
Pickup/Other Truck	10.02	6.44	9.55
Other POV	8.54	8.31	8.53
Bus ¹	7.92	7.14	7.44
Rail/Subway ¹	19.01	18.15	18.63
Taxi	6.66	3.00	5.58
Bicycle	1.87	1.45	1.72
Walk	0.72	0.38	0.57
Other	3.21	4.45	3.60
All	8.71 Mi.	6.80 Mi.	7.91 Mi.

¹See "Limitations of Data on Transit," page 5.

Note: Excludes trips greater than 75 miles.

1990

Gender

Travel Mode	Male	Female	All
Auto	10.79 Mi.	8.35 Mi.	9.54 Mi.
Pickup/Other Truck	11.53	8.60	11.15
Passenger Van	13.11	7.38	10.75
Other POV	14.90	*	14.66
Bus ¹	9.75	9.04	9.40
Rail/Subway ¹	18.25	15.16	17.01
Taxi	5.60	2.30	3.90
Bicycle	2.08	*	2.06
Walk	0.77	1.20	0.98
Other	8.59	7.09	8.20
All	10.75 Mi.	8.10 Mi.	9.55 Mi.

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-12
Commute Person Trips by Gender, Driver/Passenger Status, and Trip Length
(Urbanized Area Households)

1990

Trip Length	Male		Female		All
	Driver	Passenger	Driver	Passenger	
< .5 Mile	3.38%	4.64%	5.19%	6.64%	4.32%
1 Mile	6.20	6.83	8.61	13.08	7.55
2 Miles	7.77	7.51	10.24	10.24	8.88
3 Miles	8.66	12.43	9.76	10.16	9.32
4 Miles	5.06	4.53	5.72	6.76	5.39
5 Miles	8.76	11.21	10.29	7.74	9.42
6 Miles	4.06	5.47	4.59	2.54	4.25
7 Miles	4.32	1.76	5.39	4.12	4.64
8 to 10 Miles	15.67	11.17	15.70	12.00	15.32
11 to 15 Miles	14.38	11.35	12.35	11.10	13.28
16 to 20 Miles	8.61	4.83	5.25	6.66	7.02
21 to 30 Miles	8.02	7.78	4.08	6.55	6.35
31 to 40 Miles	2.79	3.67	1.81	1.75	2.38
41 to 50 Miles	1.43	2.03	0.75	0.40	1.13
51 to 75 Miles	0.90	4.79	0.26	0.26	0.76
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Average Trip Length	11.02 Mi.	12.63 Mi.	8.32 Mi.	8.35 Mi.	9.86 Mi.
All	50.83%	3.84%	40.17%	5.16%	100.00%
Commute Person Trips (in Millions)	14,338	1,084	11,332	1,455	28,210

Note: Excludes trips greater than 75 miles.

TABLE 3-13
Average Commute Travel Time by Mode and Urban Size Group

1983

Travel Mode	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Auto	14.73 Min.	19.12 Min.	19.98 Min.	16.60 Min.	16.96 Min.
Passenger Van	16.41	21.68	23.07	22.59	20.30
Pickup/Other Truck	17.01	18.75	26.83	17.87	18.35
Other POV	14.73	22.15	28.14	16.01	18.45
Bus ¹	28.67	40.04	34.30	27.88	34.43
Rail/Subway ¹	*	*	48.51	*	48.72
Taxi	*	*	18.10	6.56	14.59
Bicycle	13.22	20.49	7.46	12.81	14.42
Walk	8.08	9.41	11.44	6.74	8.58
Other	29.15	9.00	16.62	33.42	27.42
All	15.03 Min.	19.91 Min.	23.27 Min.	16.61 Min.	17.81 Min.

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-13 (Continued)
Average Commute Travel Time by Mode and Urban Size Group

1990

Travel Mode	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
Auto	15.19 Min.	19.03 Min.	20.95 Min.	17.52 Min.	18.05 Min.
Van	15.95	18.31	22.62	17.91	18.32
Pickup/Other Truck	16.61	21.44	22.25	19.77	19.65
Other POV	18.24	12.30	41.57	25.22	25.47
Bus ¹	30.52	33.68	39.26	38.76	36.20
Rail/Subway ¹	*	*	47.19	*	46.68
Taxi	*	*	12.86	*	11.72
Bicycle	15.23	18.53	14.76	13.18	15.60
Walk	10.87	10.17	10.43	8.05	9.77
Other	20.55	*	34.07	47.26	35.50
All	15.63 Min.	19.47 Min.	23.03 Min.	18.01 Min.	18.88 Min.

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 3-14
Average Commute Travel Time by Number of Occupants and Urban Size Group
(Privately Operated Vehicles)

1990

Number of Occupants	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
One	15.31 Min.	19.11 Min.	21.22 Min.	17.99 Min.	18.22 Min.
Two	15.82	20.96	22.25	20.18	19.81
Three	19.69	18.24	17.79	15.89	17.26
Four	16.71	18.34	23.98	19.19	19.02
Five +	16.35	34.58	14.75	31.89	28.25
All	15.41 Min.	19.26 Min.	21.25 Min.	18.15 Min.	18.34 Min.

Note: Excludes trips greater than 75 miles.

TABLE 3-15
Average Commute Travel Time by Trip Length and Urban Size Group

1983

Trip Length	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
< .5 Mile	4.34 Min.	4.93 Min.	6.56 Min.	4.22 Min.	4.67 Min.
1 Mile	6.91	6.59	8.82	6.04	6.81
2 Miles	8.01	7.63	10.17	7.50	8.09
3 Miles	10.73	12.56	13.69	9.30	10.89
4 Miles	12.61	13.46	14.90	11.05	12.53
5 Miles	14.41	16.74	19.28	12.16	14.98
6 Miles	15.29	16.80	20.25	13.05	15.65
7 Miles	17.07	19.87	20.82	13.39	17.36
8 to 10 Miles	19.46	20.88	26.49	17.58	20.75
11 to 15 Miles	24.04	26.77	35.63	22.89	26.26
16 to 20 Miles	28.93	34.39	38.50	28.54	31.92
21 to 30 Miles	39.33	39.89	48.73	38.24	40.94
31 to 40 Miles	48.60	50.52	51.71	51.06	50.80
41 to 50 Miles	65.81	58.72	67.28	66.70	65.84
51 to 75 Miles	88.59	86.11	94.39	85.98	86.83
All	15.03 Min.	19.91 Min.	23.27 Min.	16.61 Min.	17.81 Min.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 3-15 (Continued)
Average Commute Travel Time by Trip Length and Urban Size Group

1990

Trip Length	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< .5 Mile	4.83 Min.	5.69 Min.	9.09 Min.	4.54 Min	6.12 Min.
1 Mile	6.40	6.71	8.70	5.14	6.44
2 Miles	8.72	8.47	10.74	6.77	8.41
3 Miles	9.89	10.98	13.52	8.53	10.39
4 Miles	11.64	11.49	14.46	10.13	11.74
5 Miles	13.27	13.75	16.93	10.30	13.08
6 Miles	14.79	15.49	20.09	12.64	15.34
7 Miles	16.87	16.76	20.30	13.45	16.31
8 to 10 Miles	17.77	18.96	22.67	15.83	18.49
11 to 15 Miles	22.37	24.95	28.73	21.44	23.98
16 to 20 Miles	27.86	30.34	35.17	27.36	29.87
21 to 30 Miles	34.92	37.93	43.61	36.11	38.21
31 to 40 Miles	45.75	49.66	51.82	47.52	48.72
41 to 50 Miles	56.63	65.83	62.87	59.52	60.80
51 to 75 Miles	74.15	71.91	80.88	74.30	75.92
All	15.63 Min.	19.47 Min.	23.03 Min.	18.01 Min.	18.88 Min.

Note: Excludes trips greater than 75 miles.

TABLE 3-16
Average Commute Travel Time by Residence Location and
Urban Size Group

1990

Urbanized Area Status	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
In Urbanized Area, Central City	14.96 Min.	18.56 Min.	23.50 Min.	N/A	18.22 Min.
In Urbanized Area, Not Central City	17.23	20.62	22.71	N/A	20.80
Not in Urbanized Area	N/A	N/A	N/A	18.01	18.01
All	15.63 Min.	19.47 Min.	23.03 Min.	18.01 Min.	18.88 Min.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 3-17
Average Commute Travel Time by Trip Length, Mode, and Urban Size Group

1990

Travel Distance	Under 1 Million				1 Million + w/o Rail				1 Million + w/ Rail			
	POV	Transit	Walk	Bike	POV	Transit	Walk	Bike	POV	Transit	Walk	Bike
< .5 Miles	4.16	*	5.78	*	4.59	*	6.90	*	5.36	*	7.66	*
1 Miles	5.81	*	16.36	*	5.62	*	15.82	*	6.32	18.48	14.65	*
2 to 3 Miles	8.68	24.42	37.67	16.24	8.90	30.50	*	*	9.20	27.43	25.14	*
4 to 5 Miles	12.06	33.97	*	*	12.40	29.06	*	*	13.64	31.97	*	*
6 to 7 Miles	15.47	26.48	*	*	15.38	29.31	*	*	17.07	41.76	*	*
8 to 10 Miles	17.48	28.25	*	*	18.53	36.42	*	*	19.77	46.69	*	*
11 to 15 Miles	22.17	33.30	*	*	24.57	42.09	*	*	26.87	45.19	*	*
16 to 20 Miles	27.71	*	*	*	29.89	46.34	*	*	32.93	50.39	*	*
21 to 30 Miles	34.17	*	*	*	37.91	*	*	*	41.50	56.53	*	*
31 to 50 Miles	49.88	*	*	*	54.26	*	*	*	51.51	71.87	*	*
51 to 75 Miles	74.15	*	*	*	71.91	*	*	*	79.46	86.01	*	*
All	15.48	30.51	10.87	15.23	19.33	33.23	10.17	18.53	21.39	43.56	10.43	14.76

* Insufficient data
Time is in minutes.

Note: Excludes trips greater than 75 miles.

TABLE 3-17 (Continued)
Average Commute Travel Time by Trip Length, Mode, and Urban Size Group

1990

Travel Distance	Not Urban Area				All			
	POV	Transit	Walk	Bike	POV	Transit	Walk	Bike
< .5 Miles	3.49	*	6.04	*	4.19	*	6.78	10.27
1 Miles	4.73	*	13.76	*	5.41	17.00	14.93	11.80
2 to 3 Miles	7.26	34.21	*	*	8.31	27.91	28.82	19.16
4 to 5 Miles	10.06	*	*	*	11.75	31.73	*	16.64
6 to 7 Miles	13.07	*	*	*	14.92	34.83	*	20.00
8 to 10 Miles	15.76	*	*	*	17.63	42.41	*	43.00
11 to 15 Miles	21.02	*	*	*	23.24	42.49	*	*
16 to 20 Miles	27.16	*	*	*	29.07	49.76	*	*
21 to 30 Miles	35.99	*	*	*	37.44	55.48	*	*
31 to 50 Miles	51.51	*	*	*	51.74	71.55	*	*
51 to 75 Miles	73.67	*	*	*	74.92	86.21	*	*
All	18.17	39.84	8.05	13.18	18.42	40.47	9.77	15.60

* Insufficient data
Time is in minutes.

Note: Excludes trips greater than 75 miles.

TABLE 3-18
Average Commute Travel Time by Household Income and Urban Size Group

1990

Household Income	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
< \$5,000	16.03 Min.	17.94 Min.	17.21 Min.	19.07 Min.	17.88 Min.
\$5,000 to 9,999	16.15	17.78	26.34	13.14	16.98
\$10,000 to 14,999	13.40	16.15	19.76	18.17	16.84
\$15,000 to 19,999	14.58	16.85	20.81	17.44	16.95
\$20,000 to 24,999	14.90	16.93	21.74	14.91	16.43
\$25,000 to 29,999	15.51	19.57	22.02	16.87	18.12
\$30,000 to 34,999	15.72	16.48	18.06	18.10	17.35
\$35,000 to 39,999	16.54	18.46	21.59	18.29	18.47
\$40,000 to 44,000	16.49	19.86	21.23	18.04	18.70
\$45,000 to 49,999	14.08	18.55	21.97	17.64	18.06
\$50,000 to 54,999	15.75	21.28	26.09	19.14	20.36
\$55,000 to 59,999	15.24	25.01	25.52	18.90	20.99
\$60,000 to 64,999	18.06	22.27	22.26	18.89	20.42
\$65,000 to 69,999	15.82	20.77	25.23	22.94	21.78
\$70,000 to 74,999	12.27	20.78	25.20	26.15	21.49
\$75,000 to 79,999	12.68	26.54	30.87	23.01	24.75
\$80,000 +	15.59	22.86	25.35	21.42	22.23
All	15.63 Min.	19.47 Min.	23.03 Min.	18.01 Min.	18.88 Min.

Note: Excludes trips greater than 75 miles.

TABLE 3-19
Average Commute Travel Time by Mode and Gender
(Urbanized Area Households)

1990

Travel Mode	Gender		
	Male	Female	All
Auto	19.85 Min.	16.47 Min.	18.50 Min.
Van	21.42	14.65	18.32
Pickup/Other Truck	20.13	16.39	19.65
Other PDV	25.84	15.82	25.47
Bus ¹	37.12	35.58	36.35
Rail/Subway ¹	45.72	48.15	46.68
Taxi	11.84	11.59	11.72
Bicycle	16.46	10.26	15.60
Walk	9.61	9.95	9.77
Other	28.87	47.73	35.50
All	20.43 Min.	17.02 Min.	18.88 Min.

¹See "Limitations of Data on Transit," page 5.

Note: Excludes trips greater than 75 miles.

TABLE 3-20
Average Commute Travel Time by Residence Location
and Peak¹ or Off-Peak Travel
(Urbanized Area Households)

1990

Urbanized Area Status	Travel Period		
	Peak ¹	Off-Peak	All
In Urbanized Area, Central City	18.95 Min.	17.24 Min.	18.22 Min.
In Urbanized Area, Not Central City	21.55	19.72	20.80
Not in Urbanized Area	17.57	18.60	18.01
All	19.23 Min.	18.42 Min.	18.88 Min.

¹Peak = 6:30am to 9:00am and 3:30pm to 6:00pm

Note: Excludes trips greater than 75 miles.

Chapter 4 Mode Choice

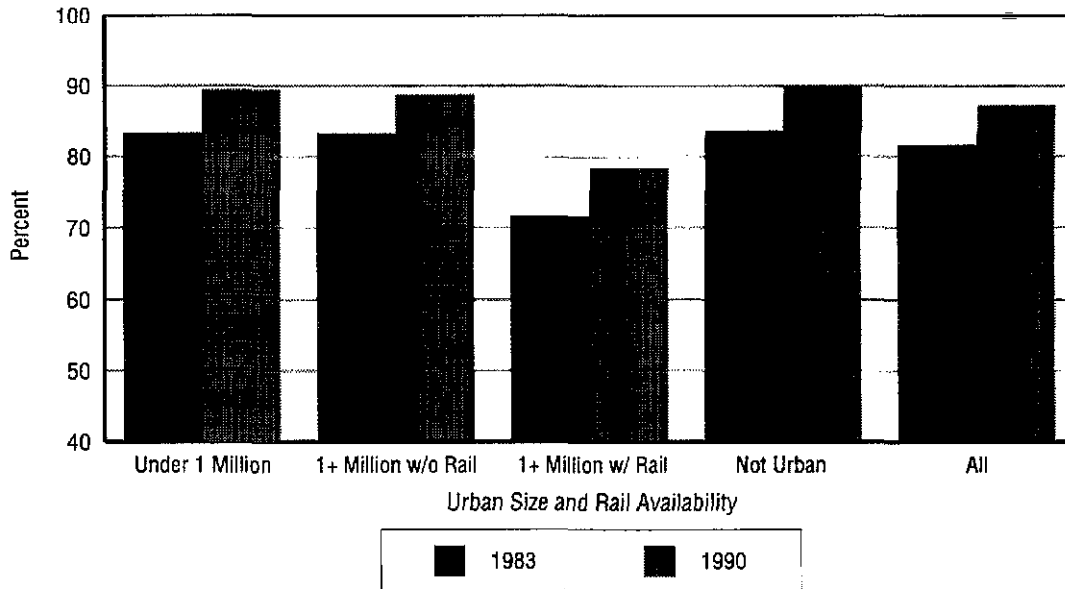
This chapter discusses travel mode for 1990 trip-making. Comparisons are made between large urban areas with rail transit service and large urban areas without such service. Comparisons are also made with 1983 mode choices.

The information is for trips of 75 miles or less.

Key Findings

- The privately operated vehicle is the dominant travel mode. This domination increased between 1983 and 1990.
- Walking was the second most favored travel mode in both 1983 and 1990, eclipsing bus, rail, taxi, and bicycle choices by about a 4-to-1 ratio.
- Privately operated vehicles are the favored choice for commuting. More than nine out of every 10 urbanized area workers selected autos, trucks, vans, and other private vehicles for their travel to and from work.
- As expected, the highest transit use (rail and bus) is in large urban areas with rail service. However, the proportion of person trips by transit modes declined between 1983 and 1990.

FIGURE 4-1
Private Vehicle Share of Person Trips by Urban Size Group



Note: Excludes trips greater than 75 miles.

Private Vehicles Dominate Personal Trip-making

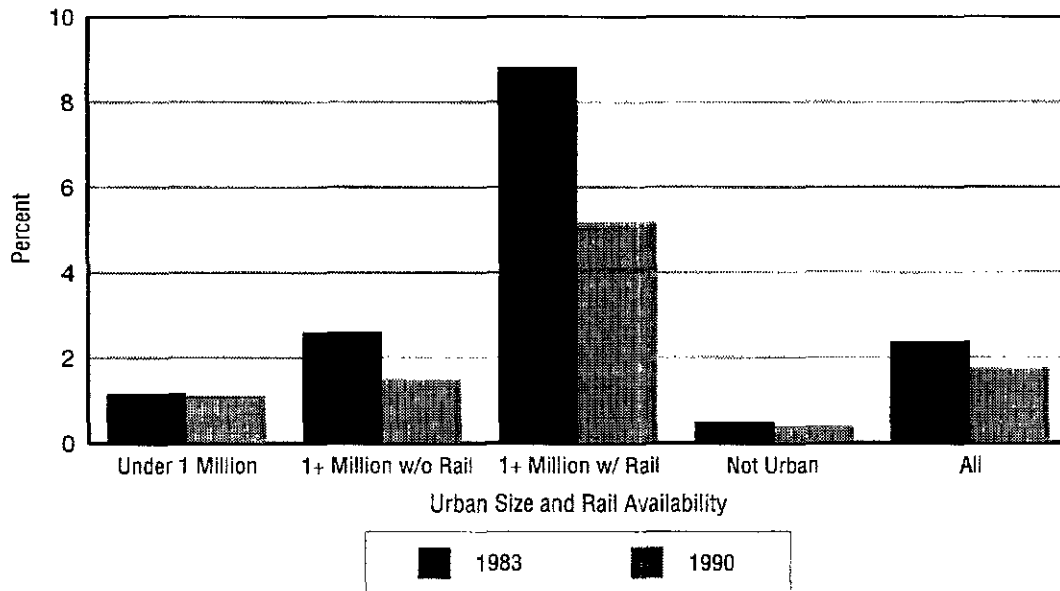
Of the more than 242 billion person trips made in 1990, 87.4 percent were made in POVs (Table 4-1). This mode share was up from 81.8 percent in 1983. Walking was a distant second place in 1990, with 7.4 percent of all person trips.

In small communities and urban areas of under 1 million population, the proportion of person trips in POVs reached 89.9 percent and 89.6 percent, respectively (Figure 4-1). Among the urban size groups in Table 4-1, the privately operated vehicle mode choice was the lowest, at 78.5 percent, in the areas of more than 1 million population that had rail service.

Less Reliance on Private Vehicles in Rail Urban Areas

The greatest proportion of person trips on bus and rail transit vehicles (5.2 percent) was in large urban areas with rail service. The proportion of walking trips was also highest (13.1 percent) in the large urban areas with rail. These mode choice findings (Table 4-1) reflect not only a wider variety of transportation services available in the large rail transit urban areas but also residential and employment densities that promote less reliance on private vehicle trip-making.

FIGURE 4-2
Transit Share of Person Trips by Urban Size Group



Note: Excludes trips greater than 75 miles.

Between 1983 and 1990, Transit Lost Ground to POV Trip-making

As a proportional share of all person trips, bus and rail transit dropped from 2.3 percent in 1983 to 1.8 percent in 1990 (Figure 4-2). (Trips of more than 75 miles are excluded, and, therefore, intracity trips, such as by Greyhound bus and AMTRAK, are not included in the tabulations.) Even in the large urban areas with rail transit service, bus and rail lost in the market share of person trips, from 8.8 percent in 1983 to 5.2 percent in 1990. Much of the transit mode share loss is attributable to increased POV shares. Transit is not alone; all other modes also lost shares over the 1983 to 1990 period to the POV mode.

Nine Out of 10 Commuting Trips are by POV

Table 4-2 indicates that 92.2 percent of the 31.6 billion 1990 urbanized area commuting trips were by five subcategories of POV. Rail and bus trips accounted for 5.3 percent. The table also shows the proportions of urbanized area commuting trips by each mode of travel that fall within 11 trip length categories. (For more information on trip length, refer to Chapter 3.)

**TABLE 4-1
Person Trips by Mode and Urban Size Group**

1983

Travel Mode	Urban Size Group				
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	All
Privately Operated Vehicle	83.45%	83.40%	71.75%	83.80%	81.78%
Bus ¹	1.18	2.61	5.38	0.50	1.75
Rail/Subway ¹	*	*	3.45	*	0.55
Taxi	*	0.33	0.53	*	0.18
Bicycle	0.85	0.84	0.53	0.70	0.75
Walk	8.70	8.38	13.81	6.63	8.61
Other	2.29	2.10	2.26	4.23	2.98
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Person Trips (in Millions)	73,104	32,258	34,588	84,779	224,728

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

1990

Travel Mode	Urban Size Group				
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
Privately Operated Vehicle	89.55%	88.87%	78.45%	89.91%	87.35%
Bus ¹	1.11	1.50	2.98	0.39	1.29
Rail/Subway ¹	*	*	2.21	*	0.47
Taxi	*	*	0.41	*	0.16
Bicycle	0.79	0.79	0.74	0.62	0.72
Walk	6.16	6.72	13.14	5.40	7.37
Other	2.23	1.96	2.04	3.50	2.62
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Person Trips (in Millions)	54,454	48,578	48,039	91,034	242,104

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

TABLE 4-2
Commute Trips by Mode and Trip Length
(Urbanized Area Households)

1990

Trip Length (Miles)

Travel Mode	< .5	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75	All	Total	Average Trip Length	Commute Trips (in Millions)
Auto	4.59%	7.84%	18.12%	14.91%	9.09%	15.62%	13.39%	6.51%	6.08%	3.30%	0.57%	72.70%	100%	9.54 Mi.	22,987
Pickup/ Other Truck	3.14	6.00	17.88	14.06	8.58	13.86	13.31	10.18	7.50	4.60	0.88	13.90	100%	11.15	3,779
Van	3.26	8.10	20.80	14.52	6.80	13.96	12.42	6.29	7.86	4.11	1.89	4.06	100%	10.75	1,140
Other POV	2.99	2.77	18.87	17.12	5.04	17.04	8.19	9.03	7.12	3.15	8.69	1.50	100%	14.66	309
Bus ¹	5.38	6.89	17.39	17.99	13.47	13.17	11.30	6.27	4.43	1.98	1.73	3.15	100%	9.40	994
Rail/Subway ¹	5.95	4.02	13.10	8.67	5.85	13.08	9.24	9.32	12.77	15.69	2.29	2.13	100%	17.01	673
Taxi	7.04	23.81	42.73	13.70	4.17	1.93	4.80	*	*	1.82	*	0.09	100%	3.90	71
Bicycle	21.95	22.62	40.38	9.11	3.03	2.83	*	*	*	*	*	0.08	100%	2.06	124
Walk	69.97	17.66	8.27	1.19	1.19	0.49	0.11	0.81	*	0.22	*	0.46	100%	0.98	1,423
Other	3.75	1.30	21.94	28.48	5.06	21.32	12.51	*	2.88	2.21	0.53	0.21	100%	8.20	77
All	7.42%	7.98%	17.77%	14.17%	8.57%	14.48%	12.47%	6.71%	6.10%	3.55%	0.78%	100.00%	100%	9.55 Mi.	31,584

¹See "Limitations of Data on Transit," page 5.

* Insufficient data

Note: Excludes trips greater than 75 miles.

Chapter 5

Occupancy of Privately Operated Vehicles

In this chapter, average occupancy and the gender of drivers are explored for various types and lengths of trips. Comparisons are made of occupancy rates for trips made by households inside and outside the central cities of urbanized and metropolitan areas. Comparisons are also made between 1983 and 1990. Of special interest is the analysis of ridesharing among members of the same household.

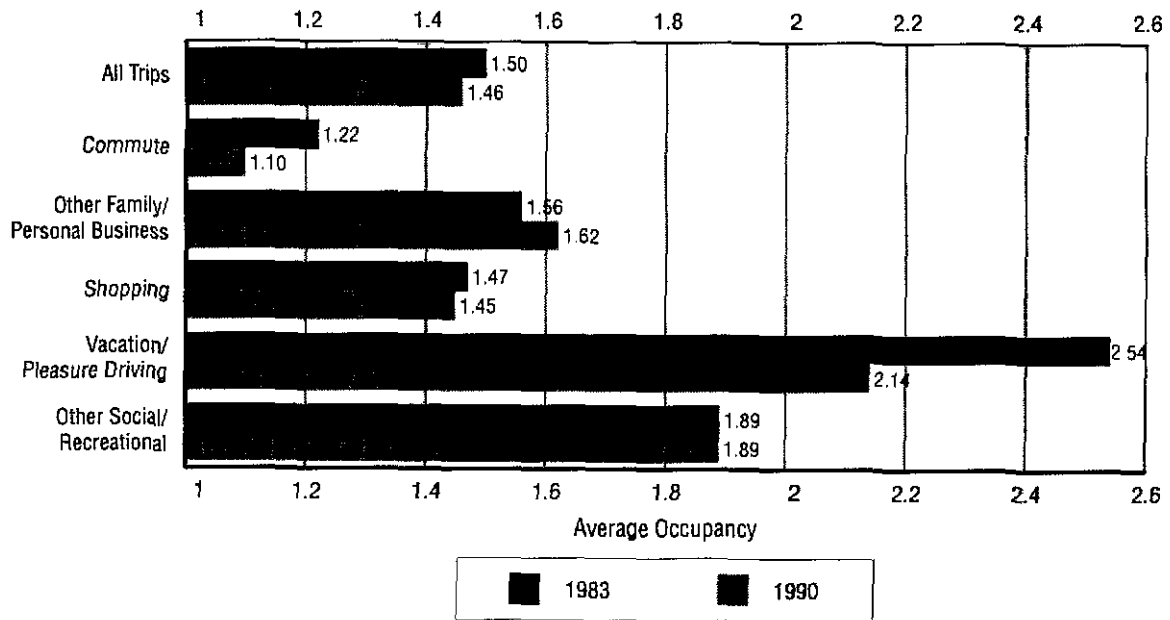
The information is for trips of 75 miles or less.

Key Findings

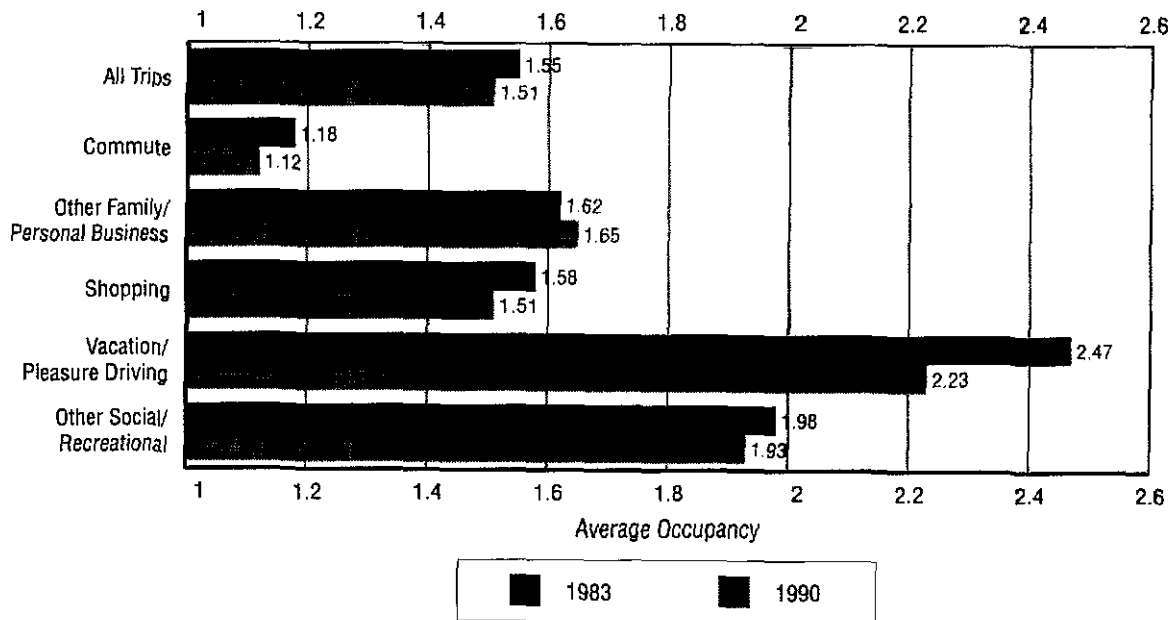
- In 1990, the average occupancy of privately operated vehicles was 1.51 persons per vehicle.
- The average occupancy rate decreased from 1983 to 1990. The greatest 1983 to 1990 decrease in average vehicle occupancy rates was for trips to and from work.
- Since the average vehicle occupancy rate is 1.12, we conclude that driving alone is the most common method of POV commuting.
- Longer vehicle trips have higher occupancy rates than shorter trips.
- Trips generated by households outside the center cities of urbanized areas have lower vehicle occupancy rates than trips generated by households within the central cities.
- For carpools of up to four people, more than half the occupants are likely to be of the same household.
- Differences in carpooling rates by gender of driver found in 1983 were eliminated by 1990.

FIGURE 5-1
Average Vehicle Occupancy by Trip Purpose for POVs

1 Million + w/ Rail



All Urban and Non Urban Areas



Note: Excludes trips greater than 75 miles.

Social Trips Account for the Highest Vehicle Occupancy Rates

The highest average occupancy of POVs in 1990 was in trips for vacation and pleasure driving (2.22 persons per vehicle). The lowest was in trips to and from work (1.12). (Figure 5-1 and Table 5-1)

Social Trips Account for the Largest Decrease in Occupants

Table 5-1 shows that the average occupancy of POVs dropped from 1.55 in 1983 to 1.51 in 1990, a 2.5 percent decrease. The largest decreases (10.1 percent each) were in vacation/pleasure driving trips (2.47 to 2.22) and trips to visit friends and relatives (1.76 to 1.59). Two types of trips — work-related business and other family/personal business — increased marginally in average vehicle occupancy rates.

Availability of Rail Transit May Impact Ridesharing

As shown in Table 5-1, large urban areas with rail service had the lowest 1990 average vehicle occupancy rate, 1.46 persons per vehicle, among the urban size groups. This urban group saw a 2.6 percent decrease over the 1983 to 1990 period in the vehicle occupancy rate for trips to and from work. Some people who would otherwise be candidates for carpools may find rail transit to be a more efficient and effective alternative. Work trip occupancy rates were more stable in the large urban areas without rail service between 1983 and 1990.

Differences in Vehicle Occupancy by Gender of Driver Eliminated by 1990

In 1983, the average vehicle occupancy rate was greater for female driver trips (1.62 persons per vehicle) than for male driver trips (1.44 persons per vehicle). However by 1990, this difference ceased to exist (Table 5-2).

In 1983, the average number of occupants of female driver vehicles outnumbered the average number of occupants of male driver trips across the spectrum of trip purposes, with the greatest disparity in other family/personal business trips and vacation/pleasure driving trips. These differences had largely disappeared by 1990 for most types of trips. The exceptions were the other family/personal business and vacation/pleasure driving trips, where the average number of occupants in female driver trips continued to outnumber the occupants of male driver trips.

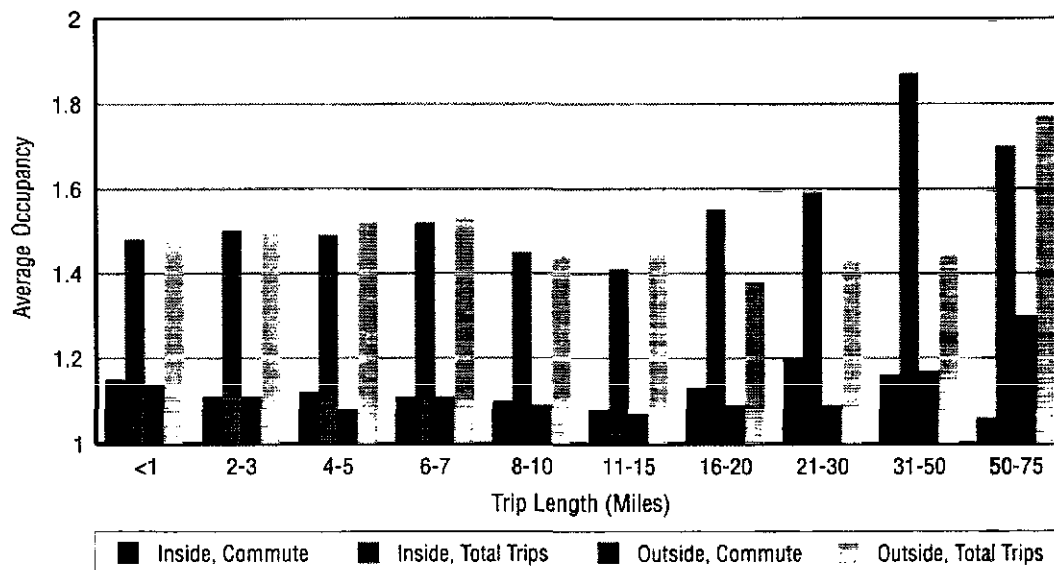
Comparing Household Locations

Tables 5-3 and 5-4 are companion tables and are summarized in Figures 5-2 and 5-3. These show the average private vehicle occupancy rates in 1983 and 1990 for various trip types and trip lengths for trips made by people residing inside and outside the central cities of urbanized areas. These tables illustrate the following major findings:

For 1990 All Trips — There is little difference in the average vehicle occupancy rates for 1990 trips made by householders living inside and outside central cities. The exception is the generally higher average occupancy rates for the longer trips made by residents of central cities. For example, for trips of 21 to 30 miles, the average occupancy rate for central city households was 1.59, whereas the average occupancy

FIGURE 5-2
Average Occupancy by Trip Purpose and Trip Length
Residence Inside or Outside the Central City

1990



Note: Excludes trips greater than 75 miles.

rate for trips of similar lengths by persons residing outside central cities was 1.43.

For 1990 Commuting Trips — Regardless of trip length and residence, the average occupancy rates for commuting trips were consistently low, near 1.1 persons per vehicle for all trips under 20 miles. For residents of central cities, vehicle occupancy rates did not go above 1.15 until trip lengths exceeded 20 miles. For residents outside central cities, vehicle occupancy rates did not go above 1.15 until trip lengths exceeded 30 miles.

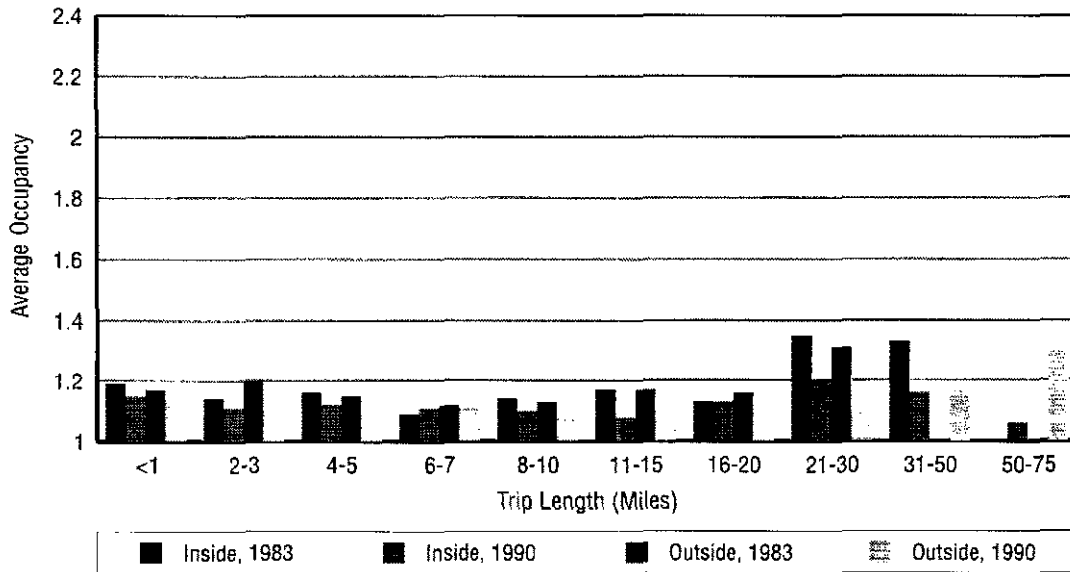
For 1983-90 Changes, All Trips — Regardless of the where a person lives, 1983 to 1990 average occupancy decreases were greatest for trips of more than 16 miles. The greatest

reduction — from 2.06 persons per vehicle in 1983 to 1.44 persons per vehicle in 1990 — was in 31 to 50 mile trips by householders living outside central cities.

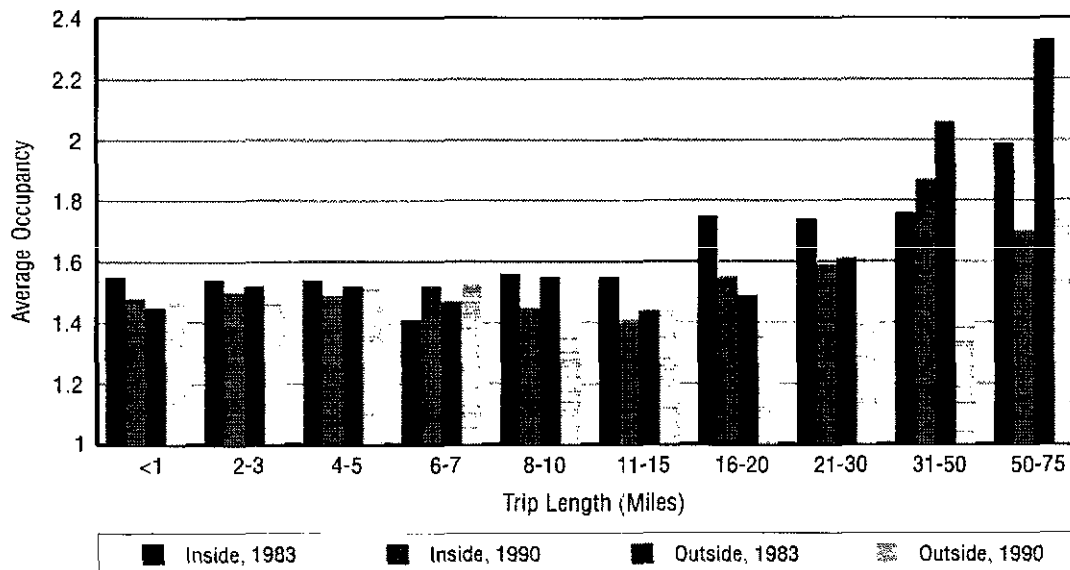
For 1983-90 Changes, Commuting Trips — As is the case for all trip types, 1983 to 1990 differences in average vehicle occupancies were not significant for commuting trips of fewer than 11 miles. For trips of more than 11 miles by persons living inside and outside central cities, the 1983 to 1990 decreases in average vehicle occupancy were more pronounced. The greatest 1983 to 1990 decreases involved trips of between 21 and 30 miles and 31 to 50 miles for commuters living outside central cities, from 1.31 to 1.09 and 1.97 to 1.17, respectively.

FIGURE 5-3
Average Occupancy by Trip Length
Residence Inside or Outside the Central City

Commute Trips



All Trips



Note: Excludes trips greater than 75 miles.

More Carpooling in Urban Areas without Rail Transit

Higher vehicle occupancy rates for commuting trips are found in large urban areas that do not have rail transit service (Table 5-5). This is especially true for trips of 20 miles or more.

No Relationship Between Household Income and Ridesharing

In Chapter 2, "VMT," several tables include occupancy data by household characteristics, and are discussed below. Table 2-5 (Chapter 2) shows the average occupancy rates for trips by households of various income levels. There is no apparent relationship.

Average Vehicle Occupancy is Inversely Related to Household Size and Vehicles Available

As households increase in size, the likelihood increases that privately operated vehicle trips have more than one occupant. As seen in Table 2-6, one-person household trips of 1990 had an average occupancy rate of 1.04 persons per vehicle. Five or more person households had a 1.14 average trip occupancy rate.

Zero- and one-vehicle households, with 1.24 and 1.26 vehicle occupancy rates, respectively, in 1990 (Table 2-7), displayed a greater propensity for ridesharing than households of four and five vehicles with 1.14 and 1.07 vehicle occupancy rates, respectively.

Family Relationship is a Key to Worker Ridesharing

The tendency for commuting ridesharers to be members of the same household is shown in Table 5-7. For carpools of up to four persons, more than half of the occupants were from the same household. For example, 62.1 percent of the persons in the average two-person carpool of 1990 were from the same household. For the average four-person carpool of 1990, 51.5 percent of the occupants were from the same household. Only in carpools of five or more persons were carpoolers more often from different households.

Table 5-8 shows that some of the "carpool" members are actually household members under age 16. The data shows that in 10 percent of the two-person carpool cases, one household member under age 16 is included. In 45 percent of the three-person "carpool" cases, one or two household members under age 16 are included. Therefore, the NPTS vehicle occupancy rate of 1.12 persons for commute trips slightly overcounts worker ridesharing.

TABLE 5-1
Average Occupancy in POVs by Trip Purpose and Urban Size Group

1983

Trip Purpose	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
Earning a Living					
To or From Work	1.16	1.14	1.22	1.19	1.18
Work-Related Business	1.38	1.29	1.22	1.31	1.31
Family and Personal Business					
Shopping	1.56	1.57	1.47	1.66	1.58
Other Family/Personal Business	1.57	1.63	1.56	1.65	1.62
Civic/Educational/Religious	1.64	1.90	1.84	2.01	1.83
Social and Recreational					
Vacation/Pleasure Driving	2.37	1.88	2.54	2.34	2.47
Visit Friends/Relatives	1.79	1.62	1.77	1.79	1.76
Other Social/Recreational	1.90	2.08	1.89	2.01	1.98
Other	1.68	1.84	1.54	1.66	1.67
All	1.52	1.53	1.50	1.60	1.55

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 5-1 (Continued)
Average Occupancy in POVs by Trip Purpose and Urban Size Group

1990

Trip Purpose	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
<i>Earning a Living</i>					
To or From Work	1.10	1.13	1.10	1.15	1.12
Work-Related Business	1.29	1.23	1.24	1.40	1.32
<i>Family and Personal Business</i>					
Shopping	1.48	1.53	1.45	1.55	1.51
Other Family/Personal Business	1.65	1.66	1.62	1.65	1.65
Civic/Educational/Religious	1.71	1.75	1.63	1.84	1.76
<i>Social and Recreational</i>					
Vacation/Pleasure Driving	1.91	1.76	2.14	2.49	2.22
Visit Friends/Relatives	1.57	1.52	1.49	1.69	1.59
Other Social/Recreational	1.90	1.89	1.89	1.99	1.93
Other	1.47	1.37	1.72	1.64	1.55
All	1.49	1.50	1.46	1.55	1.51

Note: Excludes trips greater than 75 miles.

TABLE 5-2
Average Vehicle Occupancy by Gender of Driver and Trip Purpose
(Urbanized Area Households)

1983

Trip Purpose	Average Trip Length (All Modes)			Average Trip Length (POV)			Average Number of Occupants (POV)		
	Male ¹	Female ¹	All ¹	Male ¹	Female ¹	All ¹	Male	Female	All
Earning a Living									
To or From Work	8.71 Mi.	6.80 Mi.	7.91 Mi.	8.78 Mi.	6.83 Mi.	8.00 Mi.	1.16	1.20	1.18
Work-Related Business	10.10	6.01	8.47	11.03	5.75	9.05	1.27	1.37	1.31
Family and Personal Business									
Shopping	4.32	4.28	4.30	4.11	4.34	4.24	1.47	1.59	1.54
Other Family/Personal Business	6.05	5.10	5.52	6.41	5.21	5.75	1.48	1.69	1.60
Civic/Educational/Religious	4.09	3.53	3.78	5.58	4.39	4.93	1.62	1.81	1.72
Social and Recreational									
Vacation/Pleasure Driving	19.76	16.55	18.09	21.95	19.64	21.25	2.31	3.01	2.52
Visit Friends/Relatives	7.18	7.22	7.20	8.20	7.88	8.03	1.67	1.81	1.74
Other Social/Recreational	6.44	6.50	6.47	6.99	6.67	6.84	1.87	2.07	1.96
Other	5.12	5.99	5.58	3.95	6.75	5.45	1.55	1.77	1.67
All	6.60 Mi.	5.59 Mi.	6.08 Mi.	7.25 Mi.	5.84 Mi.	6.55 Mi.	1.44	1.62	1.53

¹Includes both drivers and passengers.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 5-2 (Continued)
Average Vehicle Occupancy by Gender of Driver and Trip Purpose
 (Urbanized Area Households)

1990

Trip Purpose	Average Trip Length (All Modes)			Average Trip Length (POV)			Average Number of Occupants (POV)		
	Male ¹	Female ¹	All ¹	Male ¹	Female ¹	All ¹	Male	Female	All
Earning a Living									
To or From Work	10.57 Mi.	8.10 Mi.	9.55 Mi.	11.02 Mi.	8.32 Mi.	9.83 Mi.	1.10	1.12	1.11
Work-Related Business	9.58	6.48	8.40	9.82	6.50	8.67	1.28	1.23	1.26
Family and Personal Business									
Shopping	4.17	4.13	4.15	4.40	4.04	4.20	1.49	1.49	1.49
Other Family/Personal Business	6.34	5.47	5.84	6.51	5.24	5.81	1.58	1.70	1.65
Civic/Educational/Religious	4.39	4.34	4.37	6.71	5.91	6.29	1.77	1.64	1.70
Social and Recreational									
Vacation/Pleasure Driving	20.22	19.12	19.75	22.55	18.09	21.30	1.81	2.34	1.95
Visit Friends/Relatives	7.97	7.84	7.90	9.00	8.39	8.71	1.59	1.47	1.53
Other Social/Recreational	7.79	7.10	7.46	8.52	7.09	7.97	1.92	1.85	1.90
Other	6.72	5.85	6.32	8.25	6.77	7.62	1.52	1.43	1.48
All	7.32 Mi.	6.04 Mi.	6.65 Mi.	8.10 Mi.	6.24 Mi.	7.19 Mi.	1.48	1.49	1.49

¹Includes both drivers and passengers.

Note: Excludes trips greater than 75 miles.

TABLE 5-3
Average POVs Occupancy by Residence and Trip Purpose
Residence Inside Central City
 (Urbanized Area Households)

1983

Trip Purpose	Trip Distance (Miles)											All				
	<1	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75					
Earning a Living																
To or From Work	1.27	1.19	1.14	1.16	1.09	1.14	1.17	1.13	1.35	1.33	*	1.16				
Work-Related Business	1.14	1.22	1.19	1.20	1.27	1.19	1.21	*	2.45	*	*	1.32				
Family and Personal Business																
Shopping	1.38	1.39	1.49	1.69	1.75	2.16	1.77	2.16	*	*	*	1.58				
Other Family/Personal Business	1.49	1.82	1.64	1.75	1.40	1.51	1.43	1.92	1.74	1.60	*	1.64				
Civic/Educational/Religious	1.97	1.95	1.56	1.57	1.78	1.44	1.68	*	*	*	*	1.67				
Social and Recreational																
Vacation/Pleasure Driving	*	*	*	*	*	*	*	*	*	*	*	2.23				
Visit Friend/Relative	2.21	1.55	1.67	1.79	1.83	1.79	2.24	2.40	1.94	1.50	*	1.85				
Other Social/Recreational	2.08	1.73	2.04	1.79	1.72	1.98	2.40	2.44	2.43	*	*	1.95				
Other	*	2.25	1.40	1.44	*	*	*	*	*	*	*	1.63				
All	1.58	1.55	1.54	1.54	1.41	1.56	1.55	1.75	1.74	1.76	1.99	1.55				

* Insufficient data.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 5-3 (Continued)
Average POVs Occupancy by Residence and Trip Purpose
Residence Inside Central City
 (Urbanized Area Households)

1990

Trip Purpose	Trip Distance (Miles)											All				
	< 1	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75					
Earning a Living																
To or From Work	1.18	1.15	1.11	1.12	1.11	1.10	1.08	1.13	1.20	1.16	1.06	1.12				
Work-Related Business	1.10	1.27	1.43	1.18	1.11	1.20	1.33	1.00	1.37	*	1.19	1.26				
Family and Personal Business																
Shopping	1.35	1.40	1.45	1.60	1.61	1.67	1.71	1.79	2.28	1.77	*	1.50				
Other Family/Personal Business	1.59	1.65	1.61	1.68	1.77	1.68	1.62	1.97	1.95	1.95	2.25	1.67				
Civic/Educational/Religious	1.62	1.62	1.84	1.53	1.66	1.39	1.43	1.45	1.29	1.99	*	1.63				
Social and Recreational																
Vacation/Pleasure Driving	*	*	*	*	*	1.55	*	*	*	*	*	1.84				
Visit Friend/Relative	1.51	1.46	1.51	1.43	1.55	1.61	1.61	1.76	1.42	1.99	1.67	1.53				
Other Social/Recreational	1.78	1.72	1.92	1.79	2.13	1.85	1.90	2.09	2.09	3.41	2.13	1.92				
Other	1.86	1.29	1.41	1.71	*	1.10	1.32	*	*	*	*	1.51				
All	1.47	1.48	1.50	1.49	1.52	1.45	1.41	1.55	1.59	1.87	1.70	1.50				

* Insufficient data.

Note: Excludes trips greater than 75 miles.

TABLE 5-4
Average POVs Occupancy by Residence and Trip Purpose
Residence Outside Central City

1983

Trip Distance (Miles)

Trip Purpose	< 1	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75	All
Earning a Living												
To or From Work	1.06	1.17	1.20	1.15	1.12	1.13	1.17	1.16	1.31	1.97	*	1.19
Work-Related Business	1.33	1.74	1.13	1.29	1.26	1.38	1.20	1.18	1.41	*	*	1.31
Family and Personal Business												
Shopping	1.32	1.37	1.47	1.56	1.74	1.65	1.87	1.73	1.49	*	*	1.51
Other Family/Personal Business	1.48	1.47	1.61	1.52	1.45	1.67	1.40	1.66	1.68	2.02	3.22	1.56
Civic/Educational/Religious	2.16	1.87	1.87	1.73	1.27	1.73	1.40	1.45	*	*	*	1.76
Social and Recreational												
Vacation/Pleasure Driving	*	*	*	*	*	*	*	*	*	*	*	2.77
Visit Friend/Relative	1.30	1.54	1.63	1.43	1.74	1.85	1.73	1.86	1.94	2.10	*	1.65
Other Social/Recreational	1.79	1.81	1.95	2.09	1.78	2.03	1.83	2.13	2.37	2.49	1.69	1.98
Other	1.37	1.26	1.55	1.74	*	1.65	2.43	*	*	*	*	1.69
All	1.42	1.45	1.52	1.52	1.47	1.55	1.44	1.49	1.61	2.06	2.33	1.51

* Insufficient data.

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 5-4 (Continued)
Average POVs Occupancy by Residence and Trip Purpose
Residence Outside Central City

1990

Trip Purpose	Trip Distance (Miles)											All				
	< 1	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75					
Earning a Living																
To or From Work	1.14	1.14	1.11	1.08	1.11	1.09	1.07	1.09	1.09	1.17	1.30	1.10	1.10	1.10	1.10	1.10
Work-Related Business	1.41	1.39	1.32	1.17	1.63	1.11	1.26	1.11	1.11	1.01	1.11	1.10	1.01	1.11	1.26	1.26
Family and Personal Business																
Shopping	1.36	1.38	1.44	1.52	1.63	1.60	1.76	1.66	1.66	1.86	1.20	1.59	1.86	1.20	1.48	1.48
Other Family/Personal Business	1.46	1.54	1.65	1.67	1.66	1.63	1.59	1.74	1.74	1.62	2.47	1.73	1.62	2.47	1.62	1.62
Civic/Educational/Religious	2.03	1.98	1.83	1.85	1.75	1.51	1.73	1.57	1.57	1.33	*	1.53	1.33	*	1.79	1.79
Social and Recreational																
Vacation/Pleasure Driving	*	*	*	*	*	2.16	1.96	*	*	1.82	*	1.87	1.82	*	2.04	2.04
Visit Friend/Relative	1.38	1.53	1.38	1.52	1.53	1.59	1.77	1.46	1.46	1.32	2.02	1.75	1.32	2.02	1.53	1.53
Other Social/Recreational	1.83	1.80	1.75	1.88	2.07	1.83	1.94	1.91	1.91	2.15	1.88	2.07	2.15	1.88	1.87	1.87
Other	1.37	1.18	1.60	1.69	1.55	1.27	1.68	1.09	1.09	*	*	*	*	*	1.45	1.45
All	1.44	1.47	1.49	1.52	1.53	1.44	1.44	1.38	1.38	1.44	1.77	1.43	1.44	1.77	1.47	1.47

* Insufficient data.

Note: Excludes trips greater than 75 miles.

TABLE 5-5
Average Commute Trip Occupancy by Trip Length and Urban Size Group
(Privately Operated Vehicles)

1990

Trip Length	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
< .5 Mile	1.17	1.20	1.11	1.19	1.17
1 Mile	1.14	1.16	1.13	1.15	1.15
2 Miles	1.08	1.13	1.15	1.17	1.13
3 Miles	1.11	1.11	1.11	1.15	1.12
4 Miles	1.11	1.12	1.06	1.13	1.11
5 Miles	1.08	1.17	1.08	1.13	1.12
6 Miles	1.09	1.12	1.07	1.10	1.10
7 Miles	1.22	1.07	1.04	1.11	1.12
8 to 10 Miles	1.06	1.12	1.11	1.16	1.11
11 to 15 Miles	1.08	1.06	1.09	1.11	1.09
16 to 20 Miles	1.10	1.11	1.11	1.13	1.12
21 to 30 Miles	1.06	1.21	1.10	1.16	1.15
31 to 40 Miles	1.31	1.27	1.10	1.16	1.18
41 to 50 Miles	1.10	1.10	1.06	1.10	1.09
51 to 75 Miles	1.20	1.28	1.16	1.41	1.33
All	1.10	1.13	1.10	1.15	1.12

Note: Excludes trips greater than 75 miles.

TABLE 5-6
Average Commute Trip Occupancy by Residence Location and
Urban Size Group
(Privately Operated Vehicles)

1983

Urbanized Area Status	Urban Size Group				All
	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	
In Urbanized Area, Central City	1.14	1.18	1.31	N/A	1.16
In Urbanized Area, Not Central City	1.18	1.12	1.20	N/A	1.19
Not in Urbanized Area	N/A	N/A	N/A	1.19	1.19
All	1.16	1.14	1.22	1.19	1.18

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Urbanized Area Status	Urban Size Group				All
	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	
In Urbanized Area, Central City	1.10	1.15	1.12	N/A	1.12
In Urbanized Area, Not Central City	1.11	1.10	1.09	N/A	1.10
Not in Urbanized Area	N/A	N/A	N/A	1.15	1.15
All	1.10	1.13	1.10	1.15	1.12

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 5-7
Commute Trips by Household Member Composition and POVs Occupancy
(Urbanized Area Households)

1983

Household Members on Trip	Total Number of Persons on Trip					Total
	One	Two	Three	Four	Five +	
One	100.00%	49.65%	55.67%	44.01%	65.38%	94.07%
Two	N/A	50.35	6.88	10.35	8.98	4.69
Three	N/A	N/A	37.45	6.11	*	0.87
Four	N/A	N/A	N/A	39.53	8.78	0.29
Five +	N/A	N/A	N/A	N/A	16.85	0.08
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Commute Trips (in Millions)	19,846	1,989	504	140	107	22,586

* Insufficient data.
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Household Members on Trip	Total Number of Persons on Trip					Total
	One	Two	Three	Four	Five +	
One	100.00%	37.92%	31.43%	30.69%	39.47%	94.62%
Two	N/A	62.08	8.90	10.33	15.98	4.34
Three	N/A	N/A	59.67	7.45	10.45	0.80
Four	N/A	N/A	N/A	51.53	*	0.19
Five +	N/A	N/A	N/A	N/A	34.09	0.05
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Commute Trips (in Millions)	23,494	1,722	325	96	38	25,675

* Insufficient data.
N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 5-8
Commute Trips for Household Members Under 16 and POV Occupancy
(Urbanized Area Households)

1983

Household Members Under 16 on Trip	Total Number of Persons on Trip					Total
	One	Two	Three	Four	Five +	
Zero	99.64 %	85.99 %	60.95 %	60.47 %	74.36 %	97.21 %
One	0.36	13.31	18.05	7.51	*	1.94
Two	N/A	0.70	20.99	28.66	*	0.71
Three	N/A	N/A	*	3.36	25.64	0.14
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Commute Trips (in Millions)	19,846	1,989	504	140	107	22,586

* Insufficient data.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

1990

Household Members Under 16 on Trip	Total Number of Persons on Trip					Total
	One	Two	Three	Four	Five +	
Zero	99.97 %	89.59 %	55.18 %	51.96 %	56.96 %	98.46 %
One	*	10.41	28.63	21.92	21.06	1.21
Two	N/A	*	16.20	18.69	10.26	0.29
Three	N/A	N/A	*	7.43	11.72	0.04
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Commute Trips (in Millions)	23,494	1,722	325	96	38	25,675

* Insufficient data.

N/A = not applicable.

Note: Excludes trips greater than 75 miles.

TABLE 5-9
Average POV Commute Trip Occupancy by
Trip Length and Gender of Driver
(Urbanized Area Households)

1990

Trip Length	Gender		All
	Male	Female	
< .5 Mile	1.14	1.18	1.16
1 Mile	1.10	1.18	1.14
2 Miles	1.09	1.13	1.11
3 Miles	1.09	1.13	1.11
4 Miles	1.08	1.12	1.10
5 Miles	1.10	1.12	1.11
6 Miles	1.09	1.10	1.09
7 Miles	1.13	1.11	1.12
8 to 10 Miles	1.08	1.11	1.09
10 to 15 Miles	1.07	1.07	1.07
16 to 20 Miles	1.12	1.07	1.11
21 to 30 Miles	1.16	1.08	1.14
31 to 40 Miles	1.26	1.09	1.20
41 to 50 Miles	1.09	1.06	1.08
51 to 75 Miles	1.22	1.12	1.20
All	1.10	1.12	1.11

Note: Excludes trips greater than 75 miles.

Chapter 6

Geographic Regions and Individual Metropolitan Areas

This chapter has two distinct sections. The first section presents trips of persons living inside and outside central cities of urbanized areas, looking at trip distance and trip purpose. The second section shows travel characteristics for 12 U.S. Metropolitan Statistical Areas (MSA) where more than 200 households were sampled in the NPTS. All MSAs of more than 2.8 million population are included. The NPTS sample was not designed to be statistically accurate at the individual metropolitan area level. However, a few tables are included here for purposes of comparing the largest metropolitan areas with each other.

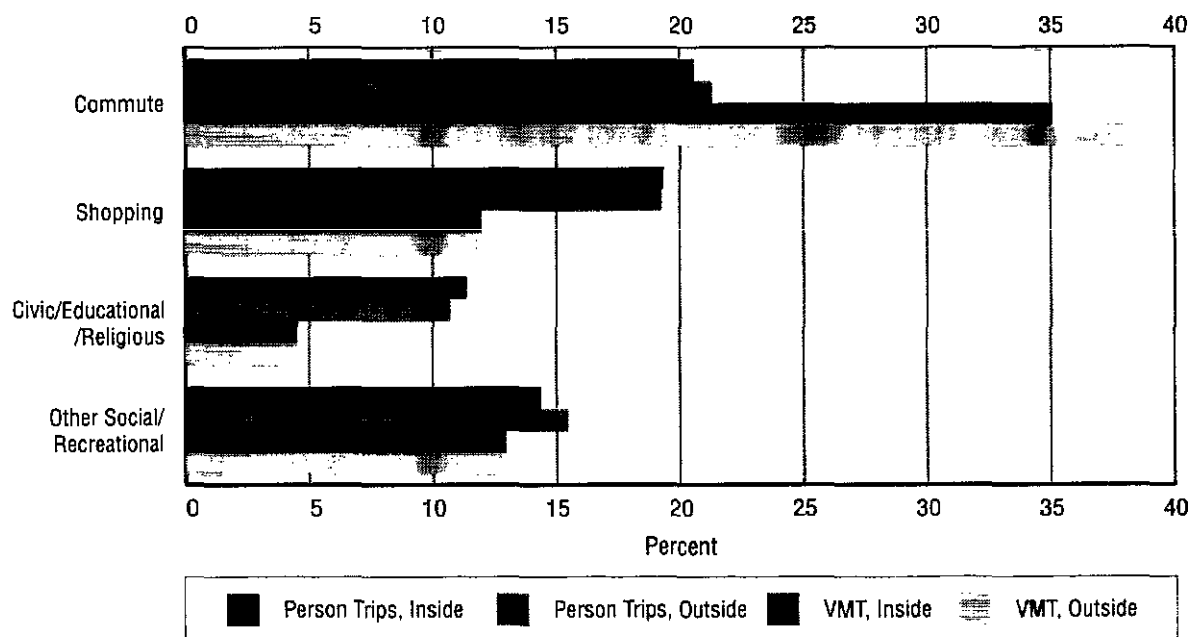
The information is for trips of 75 miles or less.

Key Findings

- Persons residing inside the central cities of urbanized areas make more shorter trips than persons living outside central cities.
- The New York City metropolitan area and Philadelphia metropolitan area show the following differences from the other 10 large MSAs:
 - fewer-than-average vehicles per licensed driver;
 - greater use of transit; and,
 - greater proportions of walking trips.
- Detroit, Dallas and Houston are the most “auto-oriented” metropolitan areas with lower than average proportions of households without vehicles and higher-than-average proportions of trips by private vehicles.
- Among the 12 metropolitan areas, the average Washington, D.C., POV commuter traveled the farthest to get to and from work, at 12.91 miles. Dallas commuters drove the fewest miles, at 10.36.

FIGURE 6-1
Person Trips and VMT by Trip Purpose, Residence Inside or Outside the Central City
(Urbanized Area Households)

1990



Note: Excludes trips greater than 75 miles.

Similarities in Travel between Households Located Inside and Outside Central Cities

Figure 6-1 and Tables 6-1 and 6-2 present the similarities in travel characteristics for urbanized area households regardless of residential location inside or outside central cities. For example, 20.5 percent of central city residents' trips were to and from work, and this compares with 21.3 percent for persons living outside central cities.

Two-Thirds of All Trips by Central City Residents are 5 Miles or Less

As shown in Table 6-1, 68.5 percent of all 1990 trips by persons living inside central cities were 5 miles or less. This proportion was less (62.1 percent) for persons living outside urbanized area central cities. When trips by POVs are isolated, as shown in Table 6-2, we see that trips 5 miles or less still dominate, but this domination is reduced to 64.5 percent for residents of central cities and 58.7 percent for persons residing outside central cities.

Commuting Accounts for Almost 40 Percent of Suburban Residents' VMT

Figure 6-1 shows the similarities in the distribution of total household VMT by purpose, whether for households inside or outside the central city. However, households outside the central city generate a larger proportion of VMT than their central city counterparts, 38 percent versus 35 percent.

Analysis of Individual Metropolitan Area Travel Characteristics

Data users are cautioned that the number of households included in the 1990 NPTS for the 12 metropolitan areas in Tables 6-3 to 6-5 range

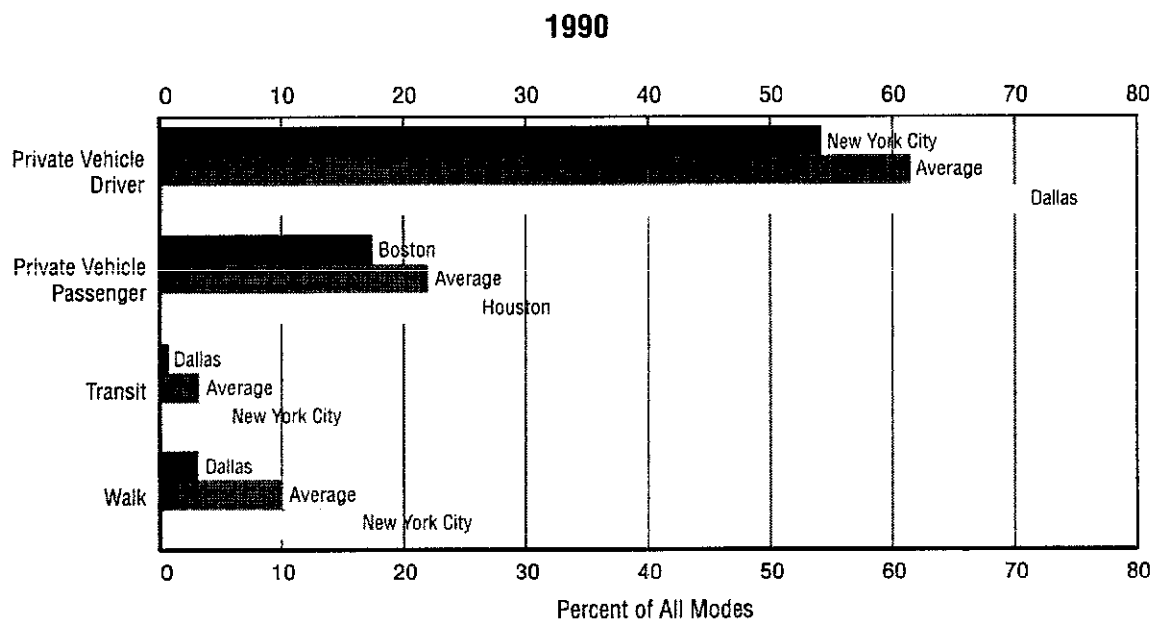
from just 208 in St. Louis to 2,712 in the New York City metropolitan area. Because of the small samples, the results have a greater margin of error than more comprehensive surveys, i.e. the decennial census of population.

New York City MSA had the Greatest Proportion of Zero-Vehicle Households

Table 6-3 shows the following information about metropolitan area vehicle availability:

- At 22.7 percent, the New York City metropolitan area had the largest share of households without an available vehicle. New York City also had the greatest proportion of households with less than one vehicle per licensed driver.

FIGURE 6-2
Person Trips by Mode
 (Lowest, Highest, and Average Among 12 Metropolitan Areas)



See "Limitations of Individual Metropolitan Area Data," page 6-1.
 Note: Excludes trips greater than 75 miles.

FIGURE 6-3
Average POV Trip Length by Trip Purpose
 (Lowest, Highest, and Average Among 12 Metropolitan Areas)

1990

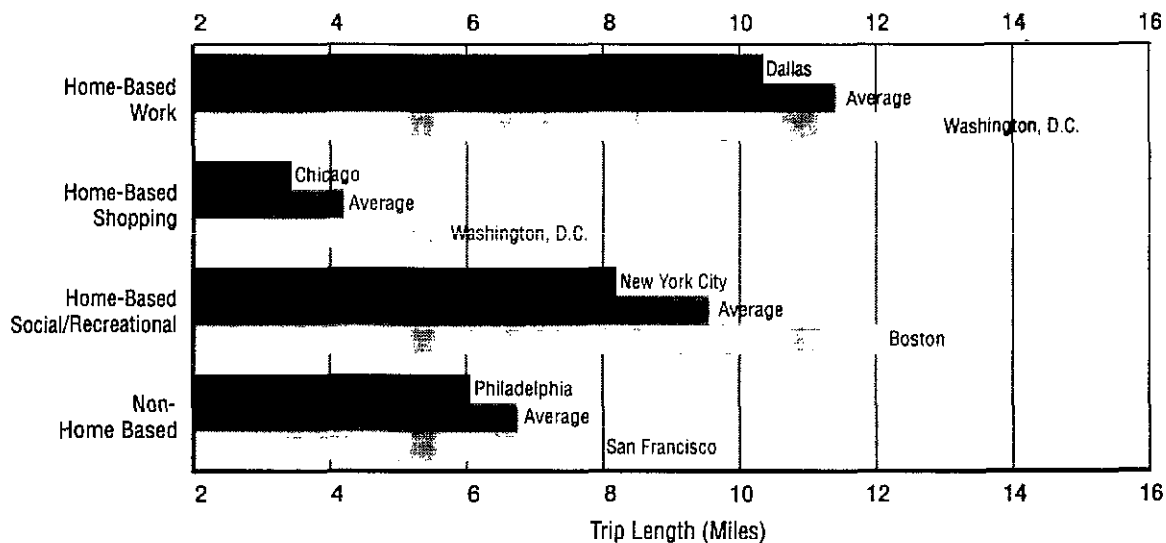
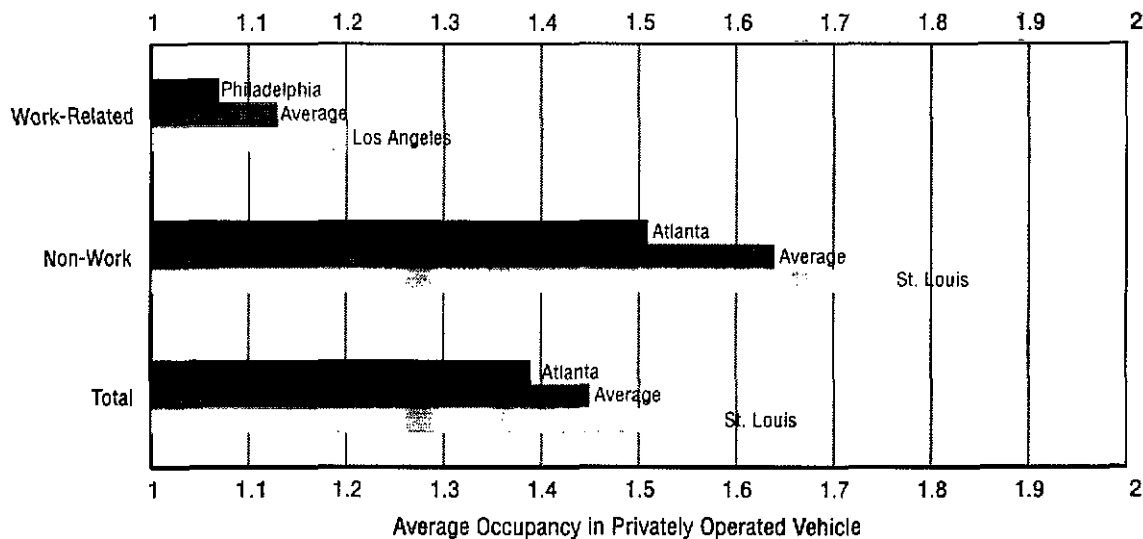


FIGURE 6-4
Vehicle Occupancy by Trip Purpose
 (Lowest, Highest, and Average Among 12 Metropolitan Areas)

1990



See "Limitations of Individual Metropolitan Area Data," page 6-1.

Note: Excludes trips greater than 75 miles.

- The San Francisco area had the smallest proportion of zero-vehicle households, at 5.5 percent. The San Francisco area also had the highest share of households with one or more vehicles per driver, at 86.9 percent.
- The Dallas metropolitan area had the largest share of three-or-more-vehicle households, at 24.4 percent. This is 6.4 percent higher than the average of the 12 metropolitan areas (18 percent). The New York City metropolitan area had the lowest share (13.8 percent) of three-or-more-vehicle households.

Dallas MSA Leads in POV Mode Choice

Table 6-4 shows that 82.5 percent (61.1 percent POV drivers plus 21.4 POV passengers) of the average daily person trips in the 12 largest metropolitan areas were in privately operated vehicles. The Dallas area recorded the greatest POV mode share, at 94.2 percent.

Transit Accounts for 7.7 Percent of New York City MSA's Person Trips

Transit's share of person trips was highest in the metropolitan areas with rail transit service. The New York metropolitan area led with 7.7 percent transit mode share, followed by Philadelphia, at 5.5 percent; Chicago, at 4.2 percent; San Francisco, at 3.5 percent; and Washington, D.C., at 3.8 percent. For the rest of the metropolitan areas, transit share of total daily trips ranged from 0.7 percent in Houston to 2.6 percent in Boston. Mode share information is shown in Table 6-4.

Commuting Commands Greatest Share of POV Trips

Also shown in Table 6-4 are the shares of vehicle trips that were made for each of five basic purposes. The Atlanta metropolitan area accounted for the greatest proportion (31.6 percent) of POV trips devoted to commuting. The San Francisco area had the smallest proportion (25.2 percent).

Longest Commute Trips in Washington, D.C., Metropolitan Area

Of the 12 metropolitan areas, the average 1990 commuting trip distance in POVs was 11.4 miles (Table 6-5). Dallas had the shortest work trip average length, at 10.36 miles. Washington, D.C. had the longest at 12.91 miles.

Shopping Trip Lengths Show Little Variation

At an average of 4.09 miles, there is little variation among the metropolitan areas in terms of POV shopping trip lengths. Washington, D.C.'s average shopping trip was the longest, at 5.66 miles, and Chicago's POV shoppers traveled the fewest miles, averaging 3.43 miles (Figure 6-3).

Los Angeles MSA Commuters Record Highest POV Occupancy Rate

Among the 12 areas, the highest average occupancy rate for POV work trips was Los Angeles' 1.20 persons per vehicle, 7.1 percent higher than the 1.12 persons per vehicle average for the 12 metropolitan areas (Figure 6-4 and Table 6-5). Washington, D.C., was second with 1.18 commuters per vehicle. Philadelphia was the lowest at an average of 1.07 commuters per vehicle.

TABLE 6-1
Person Trips by Residence, Trip Purpose, and Trip Length
Residence Inside Central City
(Urbanized Area Households, All Modes)

1990

Trip Length (Miles)

Trip Purpose	Trip Length (Miles)											Total	Person Trips (in Millions)			
	< .5	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75					
Earning a Living																
To or From Work	8.72%	8.59%	19.33%	15.24%	8.70%	14.59%	11.15%	5.32%	4.80%	2.87%	0.69%					17,539
Work-Related Business	11.09	13.87	21.78	14.76	9.88	11.07	7.87	2.53	3.60	1.73	1.82					1,065
Family and Personal Business																
Shopping	21.58	20.20	26.68	13.22	4.27	6.76	3.73	1.57	1.43	0.42	0.13					16,527
Other Family/Personal Business	16.17	16.11	24.38	14.75	6.45	9.72	5.49	2.68	2.27	1.57	0.42					18,742
Civic/Educational/Religious	21.96	18.39	25.44	11.99	6.94	6.86	5.16	1.62	0.80	0.72	0.12					9,700
Social and Recreational																
Vacation/Pleasure Driving	1.55	10.39	6.39	11.36	5.40	12.57	10.61	14.89	3.61	11.07	12.17					241
Visit Friend/Relative	20.01	13.46	19.08	14.02	6.07	10.30	6.18	3.86	3.08	2.51	1.42					8,685
Other Social/Recreational	14.58	14.80	21.34	14.82	5.89	10.34	6.88	3.51	3.86	3.30	0.87					12,286
Other	18.59	17.64	21.46	19.12	3.30	8.13	7.01	1.32	1.45	1.41	0.59					533
All	16.41%	15.12%	22.83%	14.20%	6.45%	9.99%	6.60%	3.15%	2.79%	1.89%	0.58%					85,373

Note: Excludes trips greater than 75 miles.

TABLE 6-1 (Continued)
Person Trips by Residence, Trip Purpose, and Trip Length
Residence Outside Central City
(Urbanized Area Households, All Modes)

1990

Trip Purpose	Trip Length (Miles)											Total	Person Trips (in Millions)
	< .5	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75		
Earning a Living													
To or From Work	5.80%	7.22%	15.82%	12.81%	8.41%	14.34%	14.13%	8.45%	7.72%	4.40%	0.90%	100%	14,005
Work-Related Business	7.73	12.85	17.49	11.16	7.21	14.52	11.23	5.52	6.65	5.15	0.48	100	841
Family and Personal Business													
Shopping	14.14	19.32	29.10	14.56	6.33	7.71	5.03	1.59	1.31	0.61	0.29	100	12,672
Other Family/Personal Business	12.04	15.12	26.07	15.19	7.06	9.65	6.35	3.58	2.90	1.49	0.56	100	14,196
Civic/Educational/Religious	16.60	18.28	23.55	15.93	7.97	7.62	4.89	2.71	1.46	0.76	0.23	100	7,037
Social and Recreational													
Vacation/Pleasure Driving	4.20	2.48	10.38	7.43	11.77	11.35	15.69	3.47	15.18	11.97	6.08	100	272
Visit Friend/Relative	15.69	8.25	16.72	12.63	5.61	12.42	11.62	6.69	5.81	3.18	1.38	100	6,027
Other Social/Recreational	11.09	12.11	21.40	16.92	7.19	11.77	8.02	3.80	4.17	2.45	1.10	100	10,177
Other	17.13	11.66	20.59	13.46	6.59	9.22	6.88	8.43	3.56	0.53	1.94	100	464
All	11.74%	13.38%	22.41%	14.58%	7.21%	10.70%	8.44%	4.52%	4.04%	2.25%	0.74%	100%	65,697

Note: Excludes trips greater than 75 miles.

TABLE 6-2
Person Trips by Residence, Trip Purpose, and Trip Length
Residence Inside Central City
 (Urbanized Area Households, Privately Operated Vehicles)

1990

Trip Length (Miles)

Trip Purpose	Trip Length (Miles)											Total	Person Trips (in Millions)			
	< .5	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75					
Earning a Living																
To or From Work	4.74%	7.57%	19.87%	16.10%	9.15%	16.08%	12.23%	5.63%	5.14%	3.02%	0.47%	100%	13,568			
Work-Related Business	5.17	15.40	22.13	15.72	10.17	12.32	8.97	2.58	4.13	1.55	1.87	100	823			
Family and Personal Business																
Shopping	14.36	22.93	29.41	14.20	4.76	7.40	3.86	1.57	1.12	0.30	0.09	100	10,578			
Other Family/Personal Business	12.38	16.11	26.66	15.75	6.57	10.11	5.57	2.63	2.45	1.35	0.42	100	13,031			
Civic/Educational/Religious	7.62	15.01	27.69	16.12	9.70	9.60	9.57	2.11	1.49	0.93	0.16	100	2,773			
Social and Recreational																
Vacation/Pleasure Driving	0.00	4.09	0.43	11.39	9.42	19.48	10.52	16.25	3.40	9.41	15.62	100	105			
Visit Friend/Relative	7.42	12.77	21.70	18.65	7.33	12.84	7.65	4.13	3.32	2.86	1.33	100	4,797			
Other Social/Recreational	6.50	13.58	22.63	17.27	6.84	11.64	7.83	3.76	4.55	2.90	0.69	100	5,804			
Other	7.30	18.74	22.95	24.42	3.08	6.86	8.94	2.38	2.18	2.10	1.06	100	297			
All	9.44%	14.59%	24.44%	16.03%	7.19%	11.55%	7.71%	3.46%	3.17%	1.89%	0.52%	100%	51,782			

Note: Excludes trips greater than 75 miles.

TABLE 6-2 (Continued)
Person Trips by Residence, Trip Purpose, and Trip Length
Residence Outside Central City
 (Urbanized Area Households, Privately Operated Vehicles)

1990

Trip Purpose	Trip Length (Miles)											Person Trips (in Millions)		
	< .5	1	2 to 3	4 to 5	6 to 7	8 to 10	11 to 15	16 to 20	21 to 30	31 to 50	50 to 75	Total	100%	
Earning a Living														
To or From Work	3.55%	6.92%	15.91%	13.31%	9.00%	15.26%	14.89%	8.81%	7.56%	4.01%	0.78%	100%	100%	12,107
Work-Related Business	5.66	12.40	18.42	11.65	7.40	15.63	11.43	5.61	7.31	3.91	0.57	100%	100%	717
Family and Personal Business														
Shopping	11.09	20.41	30.68	15.21	6.11	7.89	4.88	1.54	1.35	0.56	0.28	100%	100%	9,047
Other Family/Personal Business	9.98	16.05	27.29	15.21	7.03	10.03	6.90	3.13	2.69	1.25	0.43	100%	100%	10,590
Civic/Educational/Religious	6.64	13.78	20.62	19.66	11.29	10.78	6.83	4.87	3.18	1.84	0.51	100%	100%	2,290
Social and Recreational														
Vacation/Pleasure Driving	7.78	3.24	5.94	8.25	8.47	13.69	13.04	3.23	16.28	13.91	6.16	100%	100%	147
Visit Friend/Relative	8.30	7.63	19.06	13.48	6.33	15.20	11.89	7.99	6.19	2.78	1.16	100%	100%	3,781
Other Social/Recreational	5.66	10.88	23.85	18.76	8.38	12.24	8.00	4.13	4.03	2.81	1.27	100%	100%	5,345
Other	9.59	9.30	24.86	13.80	8.35	10.65	6.02	11.49	3.49	0.03	2.43	100%	100%	298
All	7.53%	12.84%	23.18%	15.11%	7.72%	11.87%	9.31%	5.08%	4.36%	2.29%	0.69%	100%	100%	44,324

Note: Excludes trips greater than 75 miles.

TABLE 6-3
Travel Statistics for the 12 Metropolitan Areas with Over 2 Million Population

1990

MSA Name	1990 Population ¹	1990 Total Households ¹	Unweighted Households Sampled ²	Percent of Households by Number of Vehicles Available				Percent of Households by Vehicles per Driver	
				Zero	One	Two	Three +	< 1 Vehicle per Driver	> = 1 Vehicle per Driver
Atlanta	2,833,511	1,056,929	226	9.80%	32.89%	35.63%	21.68%	18.82%	81.18%
Boston	4,171,747	1,545,347	221	11.65	34.13	35.99	18.23	30.18	69.82
Chicago	8,063,633	2,903,236	575	10.10	36.67	37.98	15.24	20.55	79.45
Dallas	3,885,415	1,452,215	288	6.06	33.41	36.15	24.38	17.95	82.05
Detroit	4,665,236	1,724,767	339	6.04	29.78	44.03	20.15	15.49	84.51
Houston	3,711,043	1,333,707	250	8.60	31.16	41.41	18.83	19.61	80.39
Los Angeles	14,531,529	4,909,218	947	6.57	33.86	38.80	20.76	18.08	81.92
New York City	17,125,727	6,617,074	2,721	22.68	33.38	30.14	13.80	36.16	63.84
Philadelphia	5,899,345	2,151,624	425	16.99	30.62	36.26	16.14	29.91	70.09
St. Louis	2,444,099	923,639	208	11.36	35.22	38.09	15.33	20.35	79.65
San Francisco	6,253,311	2,334,992	432	5.48	36.20	36.28	22.04	13.11	86.89
Washington, D.C.	3,923,574	1,460,785	326	10.48	32.22	38.19	19.10	24.27	75.73
All	77,508,170	28,413,533	6,958	12.25%	33.50%	36.28%	17.97%	24.01%	75.99%

¹1990 Census

²1990 NPTS Sample

See "Limitations of Individual Metropolitan Area Data," page 6-1.

Note: Excludes trips greater than 75 miles.

TABLE 6-4
Travel Statistics for the 12 Metropolitan Areas with Over 2 Million Population

1990

MSA Name	Person Trips by Mode					Vehicle Trips by Purpose				
	POV Driver	POV Passenger	Transit	Walk	Other	Home-Based Work	Home-Based Shopping	Home-Based Social Recreational	Home-Based Other	Non- Home-Based
Atlanta	67.92%	22.44%	1.97%	4.45%	3.12%	31.58%	10.69%	15.34%	18.44%	24.96%
Boston	65.76	17.45	2.55	11.73	2.42	28.97	13.55	17.17	17.93	22.38
Chicago	58.62	20.78	4.17	12.66	3.75	30.70	15.49	15.02	16.44	22.37
Dallas	70.89	23.28	0.76	3.20	1.57	26.24	11.51	11.92	24.89	25.44
Detroit	65.87	23.68	1.78	5.73	3.80	28.36	11.99	15.15	20.10	24.00
Houston	65.18	26.02	0.74	4.32	3.73	28.35	14.02	12.39	22.47	22.77
Los Angeles	63.36	23.90	1.67	8.33	2.74	30.01	12.98	13.78	19.10	24.13
New York City	54.23	18.52	7.67	16.06	3.49	27.94	14.63	14.64	21.31	21.48
Philadelphia	56.42	19.27	5.52	15.50	3.29	30.68	15.50	15.16	18.69	19.97
St. Louis	64.31	23.48	1.13	6.73	3.29	28.31	13.07	12.06	20.64	25.92
San Francisco	61.35	22.12	3.53	11.47	1.44	25.20	15.16	15.57	20.92	22.30
Washington, D.C.	60.94	20.89	3.81	9.82	4.53	30.08	12.76	13.16	19.89	24.10
All	61.10%	21.44%	3.67%	10.60%	3.14%	28.87%	13.76%	14.34%	20.03%	23.00%

See "Limitations of Individual Metropolitan Area Data," page 6-1.

Note: Excludes trips greater than 75 miles.

TABLE 6-5
Travel Statistics for the 12 Metropolitan Areas with Over 2 Million Population

1990

MSA Name	Average POV Trip Length by Trip Purpose (in Miles)					POV Occupancy		
	Home-Based Work	Home-Based Shopping	Home-Based Social Recreational	Home-Based Other	Non- Home-Based	Work	Non-Work	Total
Atlanta	11.62 Mi.	4.99 Mi.	10.55 Mi.	5.63 Mi.	6.71 Mi.	1.14	1.51	1.39
Boston	11.32	4.72	12.10	8.89	6.87	1.10	1.61	1.47
Chicago	10.78	3.43	8.30	4.93	6.68	1.09	1.60	1.45
Dallas	10.36	3.66	10.98	6.12	6.63	1.08	1.59	1.46
Detroit	11.64	4.85	8.96	6.83	7.69	1.12	1.67	1.52
Houston	10.42	4.01	9.44	6.70	6.90	1.11	1.73	1.56
Los Angeles	12.26	3.49	9.19	6.41	6.50	1.20	1.64	1.51
New York City	11.43	3.82	8.20	5.58	6.44	1.10	1.61	1.47
Philadelphia	10.98	3.97	10.75	5.96	6.06	1.07	1.55	1.40
St. Louis	11.09	4.90	8.56	6.85	7.49	1.11	1.76	1.58
San Francisco	10.75	4.52	11.41	6.59	7.93	1.09	1.59	1.47
Washington, D.C.	12.91	5.66	11.18	6.97	6.89	1.18	1.70	1.56
All	11.42 Mi.	4.09 Mi.	9.61 Mi.	6.25 Mi.	6.80 Mi.	1.12	1.63	1.48

See "Limitations of Individual Metropolitan Area Data," page 6-1.

Note: Excludes trips greater than 75 miles.

Chapter 7

Commute Trips by Time of Day

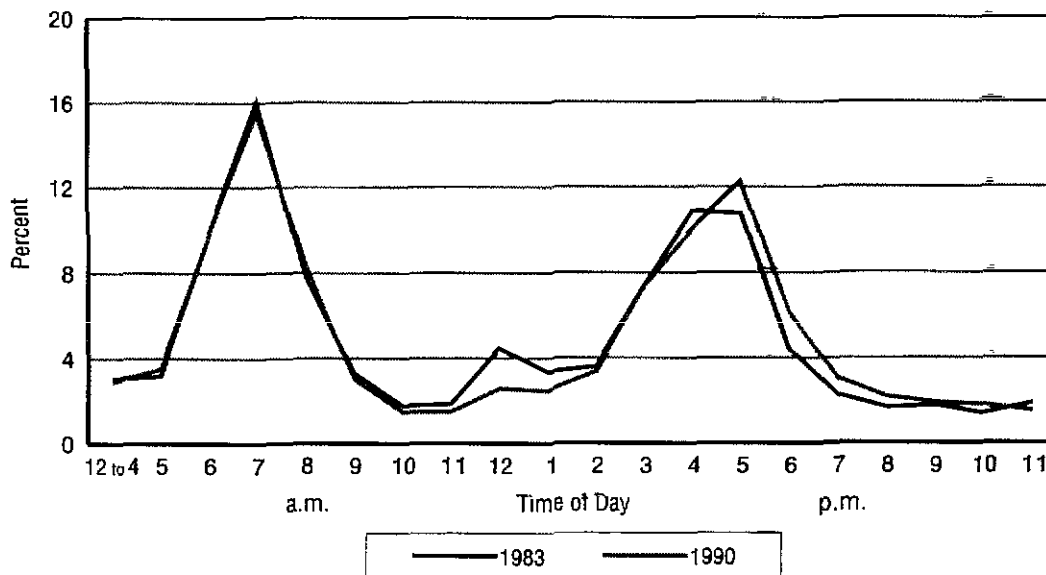
This chapter reviews commute trip patterns in terms of time of day of trip starts. Changes in trip patterns and variations by gender between 1983 and 1990 are analyzed. In addition, privately operated vehicle occupancy rates are reviewed to detect time-of-day differences or similarities.

The information is for trips of 75 miles or less.

Key Findings

- Commuting patterns are remarkably similar for all urban size groups.
- The 7:00 a.m. to 7:59 a.m. morning rush hour has the highest concentration of commuter trips.
- Rail commuting peaks more sharply in the morning and evening peak periods of travel than does commuting in POVs.
- The evening peak period of commuting expanded in duration from 1983 to 1990, because more 1990 commuters started their trip home during later hours of the evening.
- The peak period of morning commuting for males begins one hour earlier than for females. There is no discernible difference between males and females in evening peak periods of commuting.
- The peak periods of commuting show no differences in vehicle occupancy rates from other hours of the day.

FIGURE 7-1
Commute Person Trips by Time of Day



Note: Excludes trips greater than 75 miles.

Morning Peak Hour is Most Concentrated

The 7:00 a.m. to 7:59 a.m. hour had a greater share (15.4 percent) of 1990 commuter trips than any other hour of the day (Figure 7-1 and Table 7-1). The second highest peak hour was from 5:00 p.m. to 5:59 p.m. (12.2 percent).

More Trips in the 5:00 p.m. to 5:59 p.m. 1990 Peak Hour

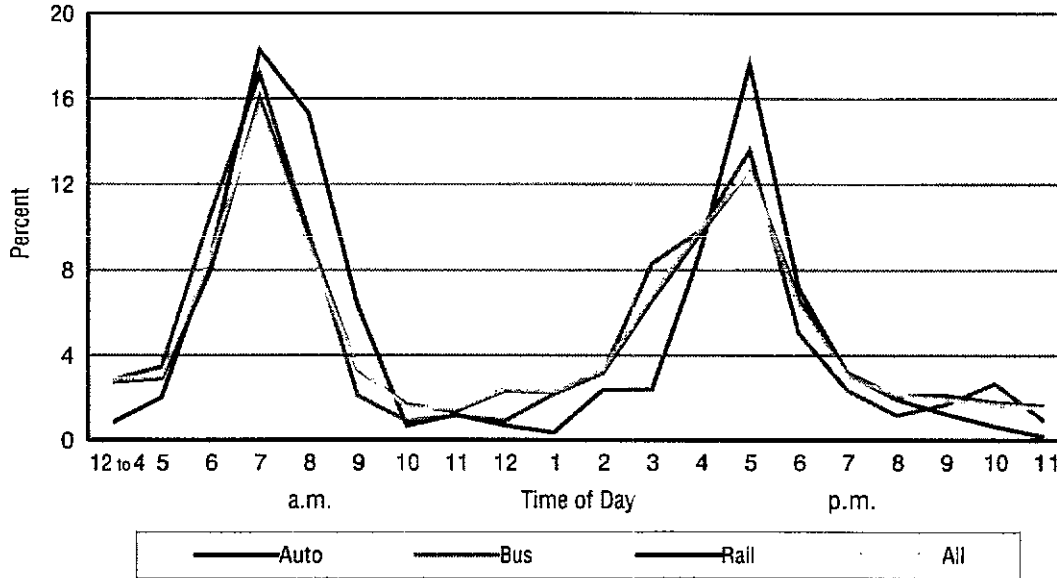
While there was very little change from 1983 to 1990 in the morning commuting pattern, some changes did occur in the evening commute hours. First, 1990 commuter trips were more concentrated in the 5:00 p.m. to 5:59 p.m. hour (Figure 7-1) than in 1983 (12.2 percent versus 10.7 percent of total daily commuting trips).

Second, the evening peak period expanded in duration. This is due to the survey finding that more 1990 commuters began their trips home from work later in the evening than in 1983. As shown in Table 7-1, 6.11 percent of 1990 commuter trips were started between 6:00 p.m. and 6:59 p.m., up from 4.4 percent in 1983. Likewise, the 7:00 a.m. to 7:59 p.m. and 8:00 p.m. to 8:59 p.m. hours had greater proportions of daily commuter trips in 1990 than in 1983.

Since the standard trip purpose coding procedure for NPTS does not specifically account for trip-chaining, it is likely that many of the trips from work to home begin earlier and include a stop before arriving home. The last trip to home in a chain that starts at work is coded as the "work-to-home" trip in NPTS. This may also account for some of the p.m. peak period spread.

FIGURE 7-2
Commuter Person Trips by Time of Day
(Trips by Mode)

1990



Note: Excludes trips greater than 75 miles.

Commuters by Rail Show Greatest Peaking

More than any other mode of commuter travel, person trips by rail are more concentrated in the peak hours. Figure 7-2 and Table 7-2 show that the rail peak hours of 6:00 a.m. to 9:59 a.m. and 4:00 p.m. to 7:59 p.m. saw a higher concentration of commuters (48.6 percent of total daily rail trips in the a.m. peak hours and 36.9 percent in the p.m. peak hours) than any other mode.

Urban Size Not a Factor in Commuting Patterns

There is a remarkable similarity in the commuting patterns of the four urban size groups. As seen in Table 7-1, the variation in the morning peak period from 6:00 a.m. to 8:59 a.m. was very small. The range was from 32.9 percent to

34.0 percent of 1990 daily commuter trips in urban areas of more than 1 million and from 33.4 percent to 33.5 percent in the smaller urban groups. This similarity in commuting patterns among urban size groups also holds true for the evening peak hours.

Peak Periods Do Not Attract Higher Occupancy Rates

As shown in Table 7-3, POV trips had slightly higher average occupancy rates from 3:00 p.m. to 8:00 p.m. Except for this increase during the late afternoon and evening, vehicle occupancy shows surprisingly little fluctuation over the course of the day.

Female Commuters Start Later in the Day

The highest proportion of morning commuting trips by women is from 7:00 a.m. to 8:59 a.m. (25.8 percent of all daily female commuting trips). The most frequent commuting start time for males was between 6:00 a.m. and 7:59 a.m. (24.4 percent of all daily male commuting trips).

No Gender Difference in Evening Commuting

In contrast, Table 7-4 shows that the evening commute period did not show any gender differences. Approximately the same proportions of males and females commuted in the three hourly periods between 4:00 p.m. and 6:59 p.m. Within these three hours, males made 28 percent of all the daily male commuter trips. These same hours also accounted for 28.4 percent of all the daily female commute trips. These differences may also reflect different trip-chaining patterns between men and women.

TABLE 7-1
Commute Trips by Time of Day and Urban Size Group
(Weekdays)

1983

Urban Size Group

Start Time (a.m.)	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	0.51 %	0.32 %	0.45 %	0.43 %	0.45 %
1:00 to 1:59	0.39	0.43	0.64	0.51	0.49
2:00 to 2:59	0.61	0.45	0.30	0.47	0.47
3:00 to 3:59	0.88	0.41	0.34	0.41	0.54
4:00 to 4:59	0.70	1.26	0.95	1.41	1.08
5:00 to 5:59	2.88	3.59	2.76	3.47	3.16
6:00 to 6:59	9.07	9.74	8.52	10.85	9.73
7:00 to 7:59	17.28	16.56	15.38	15.08	15.98
8:00 to 8:59	7.32	7.89	11.57	6.49	7.81
9:00 to 9:59	2.75	3.67	3.64	3.21	3.27
10:00 to 10:59	1.98	1.71	1.53	1.56	1.74
11:00 to 11:59	1.93	1.28	1.65	2.16	1.84

Start Time (p.m.)	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	4.97 %	3.91 %	3.40 %	4.72 %	4.46 %
1:00 to 1:59	3.31	1.94	2.41	4.18	3.33
2:00 to 2:59	3.40	2.97	4.17	3.79	3.58
3:00 to 3:59	7.67	7.84	5.92	7.82	7.38
4:00 to 4:59	10.79	11.22	10.42	10.80	10.84
5:00 to 5:59	10.79	9.86	11.59	10.81	10.70
6:00 to 6:59	4.08	5.21	4.63	4.12	4.39
7:00 to 7:59	2.11	3.24	3.06	1.71	2.21
8:00 to 8:59	1.82	1.77	1.31	1.48	1.63
9:00 to 9:59	1.87	1.44	1.92	1.63	1.73
10:00 to 10:59	1.32	2.01	1.19	1.10	1.35
11:00 to 11:59	1.48	1.28	2.20	2.06	1.84
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Commute Trips (in Millions)	12,386	6,334	7,337	14,370	40,991
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Note: Excludes trips of 75 miles or more.

(Continued)

TABLE 7-1 (Continued)
Commute Trips by Time of Day and Urban Size Group
(Weekdays)

1990

Urban Size Group

Start Time (a.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	0.57%	0.87%	0.62%	0.87%	0.75%
1:00 to 1:59	0.37	0.66	0.50	0.30	0.43
2:00 to 2:59	0.34	0.50	0.25	0.26	0.33
3:00 to 3:59	0.39	0.26	0.41	0.39	0.37
4:00 to 4:59	1.00	1.08	0.90	1.03	1.01
5:00 to 5:59	2.53	3.59	3.12	4.24	3.49
6:00 to 6:59	9.16	8.37	8.29	11.67	9.71
7:00 to 7:59	15.75	15.94	15.28	15.06	15.44
8:00 to 8:59	8.46	8.55	10.44	6.81	8.32
9:00 to 9:59	3.06	3.11	4.06	2.26	3.00
10:00 to 10:59	1.71	1.42	1.62	1.21	1.45
11:00 to 11:59	1.82	1.37	1.21	1.47	1.47
Start Time (p.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	2.85%	2.35%	2.01%	2.83%	2.56%
1:00 to 1:59	2.84	1.93	2.12	2.72	2.45
2:00 to 2:59	3.46	3.84	2.66	3.43	3.35
3:00 to 3:59	6.82	6.17	7.45	8.27	7.34
4:00 to 4:59	10.10	10.18	9.45	10.21	10.02
5:00 to 5:59	12.86	12.62	12.60	11.30	12.20
6:00 to 6:59	5.73	6.61	6.88	5.59	6.11
7:00 to 7:59	2.94	3.30	2.95	2.84	2.98
8:00 to 8:59	1.82	2.30	2.29	2.12	2.13
9:00 to 9:59	2.17	1.54	1.98	1.82	1.87
10:00 to 10:59	1.80	1.95	1.30	1.91	1.76
11:00 to 11:59	1.43	1.49	1.60	1.40	1.47
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Commute Trips (in Millions)	9,540	8,846	9,437	15,562	43,386

Note: Excludes trips of 75 miles or more.

TABLE 7-2
Person Commute Trips by Mode and Time of Day
 (Urbanized Area Households, Weekday Travel)

1990

Start Time (a.m.)	Travel Mode											All
	Auto	Pickup/ Other Truck	Passenger Van	Other POV	Bus	Rail	Taxi	Bicycle	Walk	Other	%	
12:00 to 12:59	0.63%	0.73%	1.23%	0.74%	1.09%	*%	*%	0.69%	0.99%	*%	0.68%	
1:00 to 1:59	0.41	0.86	*	1.33	1.66	*	*	1.26	0.75	*	0.51	
2:00 to 2:59	0.43	0.31	*	0.58	*	*	*	*	0.15	*	0.36	
3:00 to 3:59	0.41	0.29	*	*	*	0.44	*	1.78	0.19	*	0.36	
4:00 to 4:59	0.90	1.67	0.93	2.12	0.15	0.40	6.90	3.38	0.99	*	0.99	
5:00 to 5:59	2.93	4.54	2.84	4.15	3.48	2.03	*	1.69	1.88	1.55	3.07	
6:00 to 6:59	8.03	12.32	11.23	8.49	10.62	8.60	*	6.00	5.33	10.24	8.62	
7:00 to 7:59	16.02	15.67	11.93	19.94	17.15	18.27	13.85	11.43	10.26	8.09	15.65	
8:00 to 8:59	9.60	5.32	11.00	7.73	9.79	15.32	16.45	10.32	7.67	0.11	9.16	
9:00 to 9:59	3.36	2.55	4.08	1.78	2.11	6.38	9.97	1.25	6.06	2.71	3.42	
10:00 to 10:59	1.67	0.95	1.43	1.12	0.91	0.69	2.74	2.63	3.06	*	1.59	
11:00 to 11:59	1.38	1.56	1.39	0.82	1.16	1.20	*	1.96	3.43	*	1.47	

* Insufficient data

Note: Excludes trips greater than 75 miles.

(Continued)

TABLE 7-2 (Continued)
Person Commute Trips by Mode and Time of Day
 (Urbanized Area Households, Weekday Travel)

1990

Start Time (p.m.)	Travel Mode										All
	Auto	Pickup/ Other Truck	Passenger Van	Other POV	Bus	Rail	Taxi	Bicycle	Walk	Other	
12:00 to 12:59	2.36%	1.75%	2.88%	7.80%	0.91%	0.70%	2.78%	1.78%	5.28%	4.91%	2.41%
1:00 to 1:59	2.30	2.02	2.13	1.59	2.19	0.37	4.86	3.92	4.36	*	2.31
2:00 to 2:59	3.17	3.82	3.28	1.48	3.18	2.39	3.75	4.29	4.77	6.95	3.31
3:00 to 3:59	6.59	7.91	7.84	10.78	8.32	2.41	1.28	5.74	6.32	25.06	6.83
4:00 to 4:59	9.72	11.59	10.17	9.25	9.85	8.93	2.60	11.88	9.10	5.54	9.90
5:00 to 5:59	12.71	11.60	11.96	9.19	13.60	17.59	9.97	14.61	13.52	15.70	12.70
6:00 to 6:59	6.63	5.75	6.59	5.04	5.06	7.19	6.57	4.66	5.69	2.16	6.40
7:00 to 7:59	3.19	2.73	2.82	1.55	2.35	3.16	1.61	5.19	2.66	*	3.05
8:00 to 8:59	2.07	1.78	3.78	0.69	1.16	1.91	5.45	*	3.41	10.63	2.13
9:00 to 9:59	2.11	1.37	0.96	1.85	1.68	1.23	1.78	2.06	1.37	*	1.91
10:00 to 10:59	1.77	1.46	1.01	N/A	2.67	0.63	6.46	2.70	1.21	*	1.68
11:00 to 11:59	1.80	1.47	0.49	1.97	0.90	0.16	3.00	0.79	1.55	6.35	1.50
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Commute Trips (in Millions)	22,596	3,741	1,126	305	991	640	70	124	1,407	73	31,078

Note: Excludes trips greater than 75 miles.

TABLE 7-3
Average Commute Vehicle Occupancy by Time of Day and Urban Size Group

1990

Urban Size Group

Start Time (a.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	1.01	1.00	1.12	1.15	1.08
1:00 to 1:59	1.18	1.05	1.15	1.03	1.08
2:00 to 2:59	1.00	1.04	1.00	1.31	1.09
3:00 to 3:59	1.00	1.00	1.41	1.08	1.13
4:00 to 4:59	1.04	1.11	1.06	1.08	1.07
5:00 to 5:59	1.08	1.17	1.07	1.11	1.11
6:00 to 6:59	1.08	1.10	1.10	1.14	1.11
7:00 to 7:59	1.10	1.10	1.06	1.12	1.10
8:00 to 8:59	1.06	1.09	1.05	1.09	1.07
9:00 to 9:59	1.06	1.12	1.06	1.11	1.09
10:00 to 10:59	1.08	1.11	1.05	1.21	1.12
11:00 to 11:59	1.07	1.10	1.11	1.08	1.09

Start Time (p.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	1.08	1.12	1.06	1.19	1.13
1:00 to 1:59	1.08	1.17	1.21	1.16	1.15
2:00 to 2:59	1.07	1.13	1.09	1.16	1.12
3:00 to 3:59	1.16	1.12	1.13	1.21	1.17
4:00 to 4:59	1.11	1.15	1.15	1.15	1.14
5:00 to 5:59	1.16	1.14	1.14	1.15	1.15
6:00 to 6:59	1.14	1.19	1.10	1.20	1.16
7:00 to 7:59	1.12	1.20	1.13	1.19	1.17
8:00 to 8:59	1.08	1.12	1.10	1.19	1.14
9:00 to 9:59	1.17	1.13	1.07	1.22	1.16
10:00 to 10:59	1.08	1.20	1.14	1.16	1.14
11:00 to 11:59	1.02	1.08	1.07	1.10	1.07
All	1.10	1.13	1.10	1.15	1.12

Note: Excludes trips of 75 miles or more.

TABLE 7-4
Commute Trip Start Time by Gender
(Urbanized Area Households)

1990

Gender

Start Time (a.m.)	Male	Female	All
12:00 to 12:59	0.95 %	0.43 %	0.72 %
1:00 to 1:59	0.71	0.21	0.48
2:00 to 2:59	0.55	0.27	0.42
3:00 to 3:59	0.48	0.37	0.43
4:00 to 4:59	1.32	0.66	1.02
5:00 to 5:59	4.06	1.86	3.07
6:00 to 6:59	10.38	6.31	8.54
7:00 to 7:59	14.03	15.77	14.82
8:00 to 8:59	6.92	11.02	8.78
9:00 to 9:59	3.22	4.16	3.64
10:00 to 10:59	1.75	2.13	1.92
11:00 to 11:59	1.66	1.78	1.71
Start Time (p.m.)			
Start Time (p.m.)	Male	Female	All
12:00 to 12:59	2.59 %	2.85 %	2.71 %
1:00 to 1:59	2.05	2.89	2.43
2:00 to 2:59	3.67	3.63	3.65
3:00 to 3:59	6.83	6.89	6.86
4:00 to 4:59	9.76	9.57	9.67
5:00 to 5:59	11.59	12.76	12.12
6:00 to 6:59	6.60	5.99	6.32
7:00 to 7:59	3.17	3.08	3.12
8:00 to 8:59	2.28	1.98	2.14
9:00 to 9:59	1.94	1.92	1.93
10:00 to 10:59	1.94	1.75	1.85
11:00 to 11:59	1.56	1.71	1.63
Total	100.00 %	100.00 %	100.00 %
Commute Trips (in Millions)	17,015	14,058	31,073

Note: Excludes trips of 75 miles or more.