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Household Vehicle Ownership

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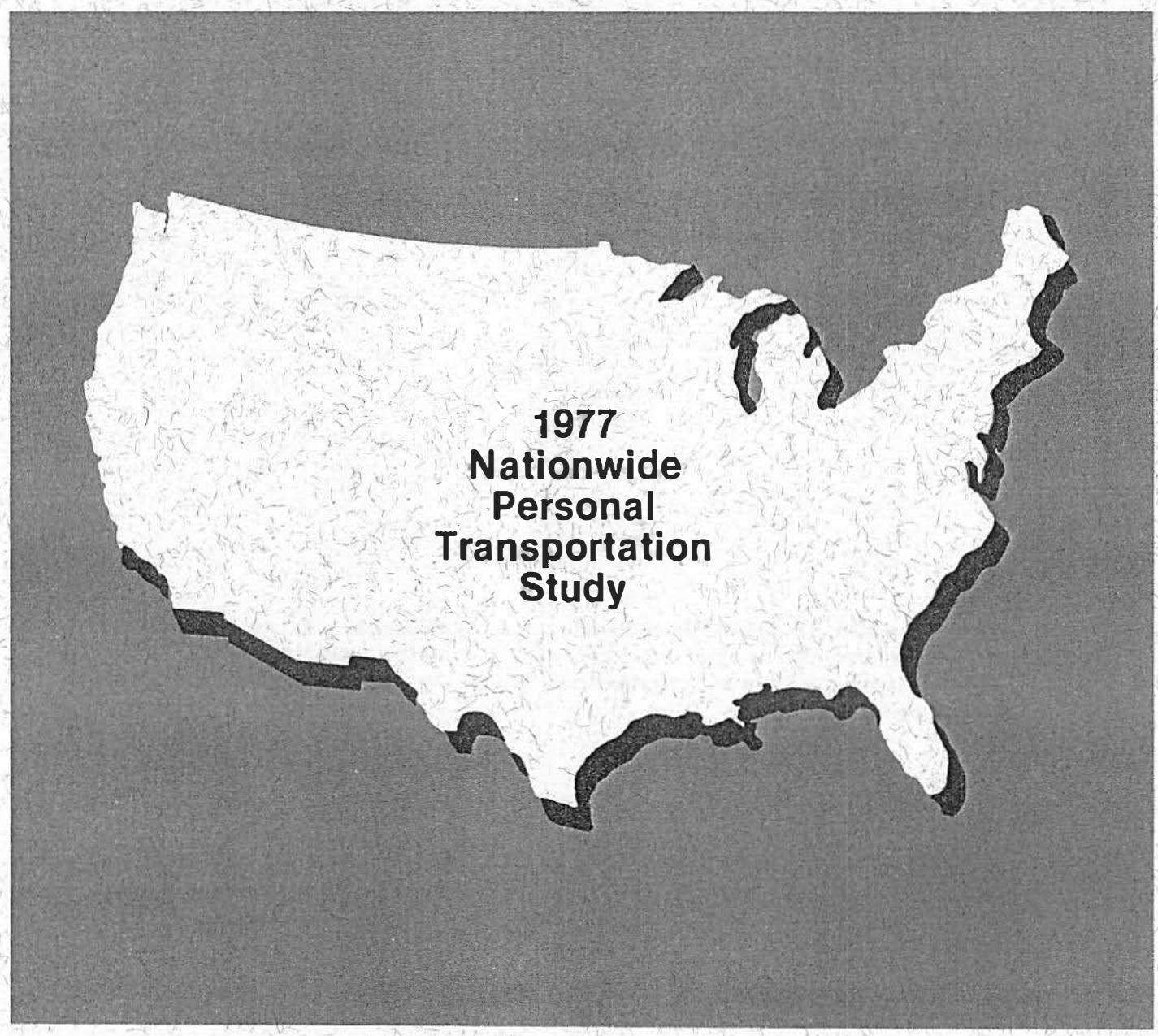

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16. Abstract
This report is part of a series that presents findings from the 1977 Nationwide Personal Transportation Study (NPTS). The report contains data on household vehicles and characteristics of households owning vehicles. Vehicle ownership is explored relative to household location, income, composition and other sociodemographic attributes of the household. Characteristics of household vehicles, such as model year, vehicle type and method of ownership (e.g., purchased, leased) are also presented. Comparisons are made with data from the 1969 NPTS to evaluate trends in vehicle ownership over time.

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1977 NATIONWIDE PERSONAL TRANSPORTATION STUDY

HOUSEHOLD VEHICLE OWNERSHIP

REPORT 2

December 1980

U.S. Department of Transportation
Federal Highway Administration
Washington, D.C. 20590

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- Of all U.S. households 84.7 percent owned at least one motor vehicle in 1977, with the average household owning 1.59 vehicles.

- Considering only auto-type vehicles, as in the 1969 NPTS, ownership averaged 1.3 vehicles per household in 1977, compared to 1.2 in 1969. In 1977, 82.1 percent of all households owned at least one auto, compared to 79.4 percent in 1969.

- Rates of vehicle ownership are higher for households in small SMSA's (1.65 vehicles per household in SMSA's under 250,000) than in large SMSA's (1.31 vehicles per household in SMSA's over 3 million).

- Rates of vehicle ownership are higher in areas outside SMSA's (1.72 vehicles per household) than inside SMSA's (1.52 vehicles per household). Within SMSA's, households residing outside of central cities own more vehicles than those within central cities (1.75 versus 1.31 vehicles).

- Income is a major determinant in vehicle ownership; households with incomes under $5,000 per year own an average of 0.73 vehicles, compared to 2.61 vehicles for households with incomes of $50,000 or more.

- Households with one driver average 1.2 vehicles, while households with two, three or four or more drivers average 2.0, 2.8 and 3.5 vehicles, respectively.

- Households with one adult (16 years or older) average 0.7 vehicles, while households with two, three or four or more adults average 1.7, 2.2 and 2.8 vehicles, respectively.

- Households with children own more vehicles than those without and the number of vehicles increases with the age of the youngest child.

- Of all household vehicles, 79.6 percent are autos (standard auto, station wagon or personal-use taxi), 12.8 percent are pickup trucks, 2.8 percent are vans, and 2.9 percent are motorcycles or mopeds.

- The average age of all household vehicles is 6.6 years, for autos it is 6.4 years and for pickup trucks it is 7.3 years.

- Households are retaining autos longer; 81 percent of all autos in 1977 were more than three years old, compared to 58.2 percent in 1969.

- The average household auto (standard auto and station wagon) in 1977 was 6.4 years old, weighed 3,640 pounds, had an engine of 6.97 cylinders, and an average fuel economy of 19 miles per gallon (combined highway and city driving).

- Of all household vehicles, 93.7 percent are owned directly through purchase by household members. Of the remaining vehicles, 3.6 percent are company owned, 0.6 percent are obtained through lease, 0.1 percent are rental vehicles and 2.0 percent are available through other means.

- Slightly more than half, 53.4 percent, of all vehicles owned through purchase by households were acquired as used vehicles.

- As income rises, households acquire a larger share of vehicles through means such as leasing or company ownership and are more likely to have purchased the vehicles they own new; vehicles owned by higher income households are generally newer, heavier in weight, and have the poorest fuel economy.

- Measured in percent of households with vehicles, number of vehicles per household, or percent of households with two or more vehicles, auto ownership increased between 1969 and 1977.

II. INTRODUCTION

A. PURPOSE OF REPORT

This report presents data compiled from the 1977 Nationwide Personal Transportation Study (NPTS) on vehicle ownership by households in the United States. Knowledge of vehicle ownership is useful in understanding the impact of sociodemographic and technological changes on household travel habits. From an improved understanding of travel behavior, we are better able to evaluate the use of transportation facilities and energy resources, as well as gauge the impacts of related policies and programs.

This report is concerned with the characteristics of vehicles owned by or available to private households, along with characteristics of households that are major factors in vehicle ownership. Another important and related aspect of vehicle ownership is the usage of vehicles as related to household and vehicle characteristics. This rather substantial area is treated in a separate report, Household Vehicle Utilization.

B. ORGANIZATION OF FINDINGS

The discussion of vehicle ownership is organized into four major topic areas. The first area, which focuses on relationships and trends in household vehicle ownership, links household characteristics such as location, income and household composition with number of vehicles owned. The second discussion area deals with characteristics of vehicles themselves. Here the composition of the private vehicle stock is examined in detail, covering such attributes as vehicle type, age, method of ownership and other physical characteristics. In important instances, differences in characteristics are explored relative to whether the vehicle is situated in a single or multivehicle household. In the third discussion area the link between household characteristics and vehicle characteristics is explored, or in other words, how vehicle attributes differ across households. The fourth area focuses on trends in vehicle ownership over time, comparing selected results from the 1969 and 1977 NPTS.

The section by section presentation and analysis of results is concluded by a summary of overall findings.

Information describing the survey procedures and data processing, including sample design, survey methodology, processing procedures, provisions for obtaining special tabulations, subject areas planned for 1977 NPTS reports, as well as an order form with description and price of the public use tapes are found in Appendixes B and C of this report.

C. DESCRIPTION OF DATA

The relationships presented in this report use information on characteristics of households and the vehicles they own as compiled by the 1977 NPTS, with select comparison to similar relationships found in the 1969 NPTS. Household characteristics examined in this report which may affect vehicle ownership patterns include residence by Standard Metropolitan Statistical Area (SMSA) population size group and location inside or outside of SMSA's; household income; household composition including number of adults and number of drivers; education and occupation of the household head; access to public transportation; and housing structure type. Vehicle characteristics, including physical attributes and method of ownership, are also explored using profile data compiled by the survey on each motor vehicle owned by the household or available on a regular basis. This data permits description of vehicles by type, model year, method of ownership or availability, and select physical characteristics, such as number of cylinders, air conditioning and transmission type. Also, for a sample of vehicles, information on fuel economy (MPG) and vehicle weight (curb weight, inertial weight, and shipping weight) has been determined from secondary sources by Federal Highway Administration (FHWA) and entered into the data record. Selected relationships are presented illustrating these characteristics in the private vehicle fleet.

D. COMPARABILITY BETWEEN 1977 NPTS AND 1969 NPTS

The 1977 NPTS is an update of the 1969 NPTS. Comparing results from the two surveys provides valuable insight into changes over time in vehicle ownership, household composition, and vehicle characteristics. The summary of

findings from the 1969 NPTS pertaining to vehicle ownership appear in Report 11, Auto Ownership.

As will happen when similar surveys are staged after a passage of time, the information acquired and procedures used are modified to better address current issues or simply to improve upon earlier effort. Thus changes have taken place in the 1977 NPTS that impact the direct comparability of the data and the results in this summary report with those of 1969.

In the context of vehicle ownership, an important change is the extension of the 1977 survey to cover all motor vehicles owned by the household. While the 1969 survey is concerned with only the automobile (defined as passenger-autos, station wagons, vanbus and personal-use taxi vehicles), the 1977 survey also includes personal trucks and vans, camper vehicles, and motorcycles and mopeds. The extension in vehicle coverage of the 1977 NPTS more accurately describes the vehicle base from which household travel decisions are made.

For the sake of comparability, certain relationships in this report have been produced and analyzed according to both 1977 and 1969 vehicle definitions. Because these definitional differences can be confusing, the report focuses first on presentation of results from the current (1977) survey. Comparisons with the 1969 data are dealt with separately in a section that presents 1977 data in comparable format and definition to the 1969 report. Differences in vehicle definition are carefully stated on tables and in discussion of results.

III. ANALYSIS OF HOUSEHOLD VEHICLE OWNERSHIP

A. VEHICLE OWNERSHIP AND CHARACTERISTICS OF THE HOUSEHOLD

This section examines characteristics of households that have an important bearing on vehicle ownership. These household characteristics include household location by SMSA population size group and location within SMSA's; household income; household composition, including number of adults, number of licensed drivers, and household structure; and other household characteristics, such as education of household head, housing structure type, and access to public transportation.

In this section, household characteristics are related to the number of motor vehicles owned. Vehicle "ownership" is defined, for the purpose of this report, as all vehicles either purchased by household members, or which are available to and used by the household on a regular basis. The most common forms of availability other than purchase include company-owned vehicles, leased, rental vehicles and vehicles available on a regular basis under other arrangements. All motorized vehicles that meet these ownership criteria are included: autos, station wagons, taxis available to the household for personal use, vanbus/minibus, other vans, pickup trucks (with and without campers), other trucks used at least periodically for personal travel, camper coaches, and motorcycles and mopeds.

Section III reports only on relationships produced from the 1977 data. In Section IV, several of the same relationships are reformatted and compared to results from the 1969 NPTS, highlighting changes in vehicle ownership which have occurred over time based on major economic and demographic shifts in our society.

Vehicle Ownership Related to Location in Standard Metropolitan Statistical Areas (SMSA's)

In 1977, 67.3 percent of all U.S. households were in Standard Metropolitan Statistical Areas (SMSA's), and 83.2 percent of all SMSA households owned at least one motor vehicle. Relationships between SMSA size and the incidence and rate of private vehicle ownership are illustrated in Table 1 and Figure 1. The data show that vehicle ownership generally declines with increasing size of SMSA. As SMSA

Table 1. Percent of Households by Vehicle Ownership* and SMSA Size Group

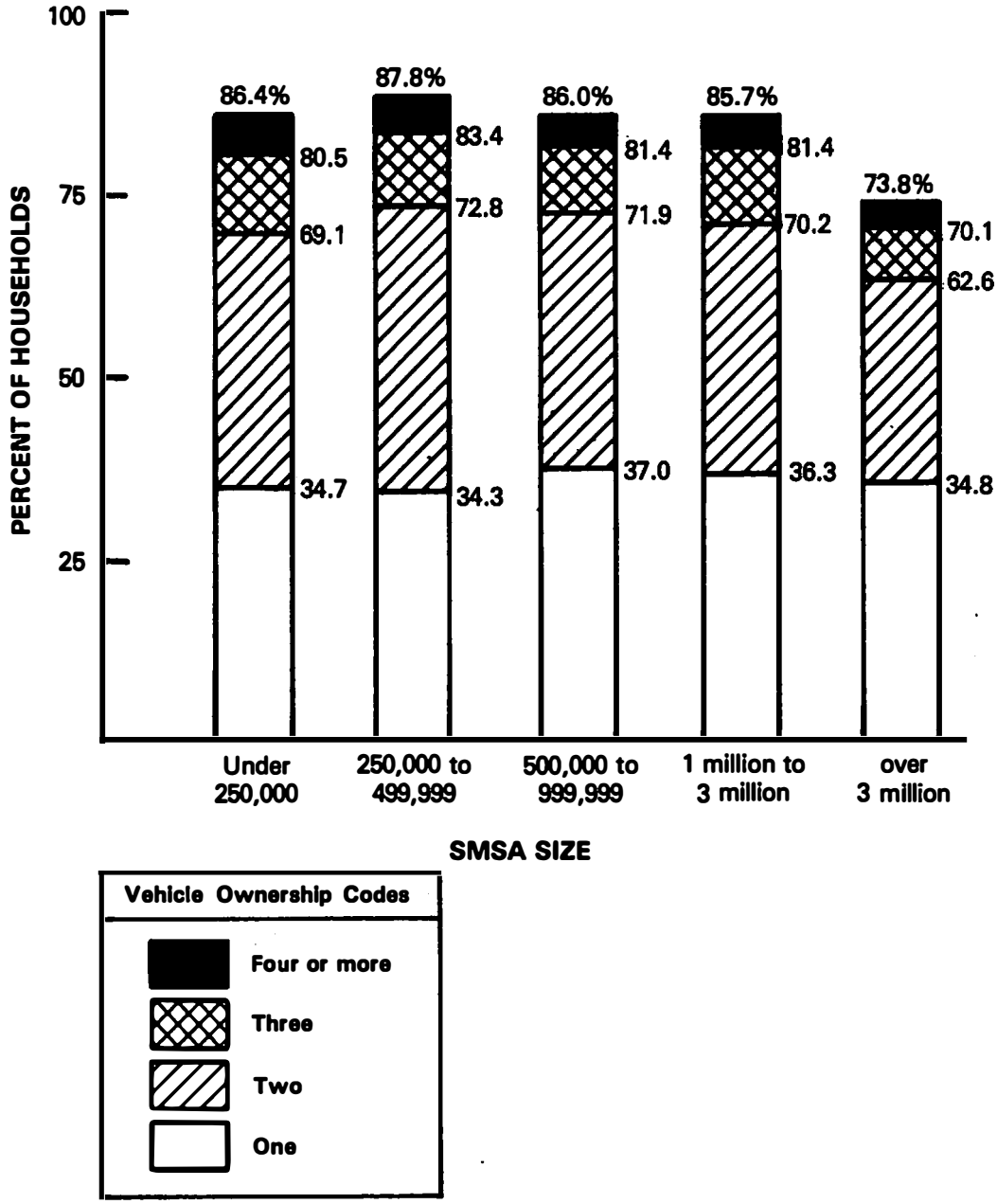
Household Vehicle Ownership	SMSA Size Group					
	Under 250,000	250,000 to 499,999	500,000 to 999,999	1 Million to 3 million	Over 3 million	All
	Within Size Groups					
One	34.7	34.3	37.0	36.3	34.8	35.5
Two	34.4	38.5	34.9	33.9	27.8	33.3
Three	11.4	10.6	9.5	11.2	7.5	10.0
Four or More	5.9	4.4	4.6	4.3	3.7	4.4
Subtotal	86.4	87.8	86.0	85.7	73.8	83.2
None	13.6	12.2	14.0	14.3	26.2	16.8
Total	100.0	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	1.65	1.63	1.57	1.57	1.31	1.62
	By Ownership Group					
One	12.0	14.9	16.2	32.3	24.6	100.0
Two	12.7	17.7	16.3	32.3	21.0	100.0
Three	14.1	16.4	14.9	35.6	19.0	100.0
Four or More	16.5	15.4	16.1	30.9	21.1	100.0
None	10.0	11.2	13.0	26.8	39.0	100.0
All Households	12.3	15.4	15.6	31.6	25.1	100.0†

† Total Households = 50,819,000 (75,412,000 less 24,593,000 not residing in SMSAs)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

FIGURE 1

PERCENT OF HOUSEHOLDS OWNING ONE OR MORE VEHICLES BY SMSA SIZE



Source: Based on data presented in Table 1

population size increases other characteristics of urban life, such as density, nearness of activities, and availability of public transportation, are intensified and reduce the need for household vehicle ownership.

SMSA households own an average of 1.52 motor vehicles in 1977. This ranges from a high of 1.65 for households in SMSA's under 250,000 to a low of 1.31 in SMSA's of 3 million or more. The same patterns exist in the incidence of vehicle ownership. While 16.8 percent of all SMSA households own no vehicles, only 13.6 percent of households in SMSA's under 250,000 are without vehicles in contrast to 26.2 percent of households in SMSA's over 3 million.

Relationships between SMSA size and multivehicle ownership are better seen in the bottom half of Table 1. While households in SMSA's over 3 million account for 25.1 percent of all SMSA households, they account for 39 percent of all nonvehicle households. In contrast, households in SMSA's under 1 million account for 43.3 percent of all SMSA households, but make up 46.7 percent of two-vehicle, 45.4 percent of three-vehicle and 48 percent of four-or-more-vehicle households.

Location Inside or Outside SMSA's

Table 2 indicates that about two-thirds (67.3 percent) of all households reside within SMSA's, with slightly more than half of these (51.9 percent) living inside central cities. A striking contrast in vehicle ownership exists between the central city and noncentral city or suburban group. Only 9.8 percent of noncentral city households do not possess vehicles, while 23.4 percent of central city households are without vehicles, as shown in the top half of Table 2. Moreover, multivehicle ownership is more prevalent in households outside central cities. Of all noncentral city households, 57.0 percent own more than one vehicle, compared to only 39.0 percent of central city households. Overall, noncentral city households own 33.6 percent more vehicles than central city households, or 1.75 compared to 1.31 vehicles.

Of the non-SMSA households, those living in areas with population under 5,000 maintain greater incidence and higher rates of vehicle ownership. Ownership rates

Table 2. Percent of Households by Vehicle Ownership* and Household Location Inside or Outside SMSAs

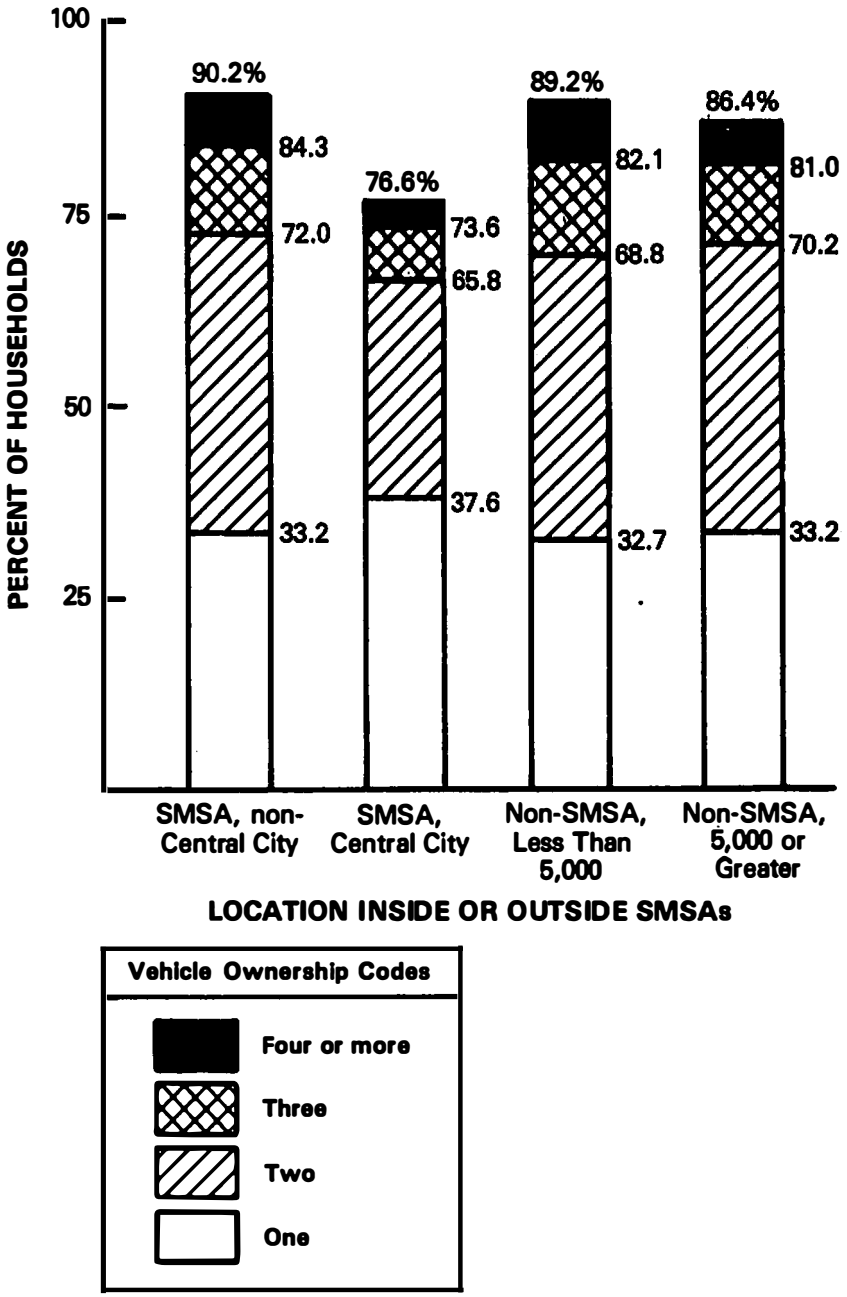
Household Vehicle Ownership	Location Inside or Outside SMSAs				
	SMSA, Non-Central City	SMSA, Central City	Non-SMSA, Less than 5,000	Non-SMSA, 5,000 or greater	All
	Within Location Groups				
One	33.2	37.6	32.7	33.2	34.6
Two	38.8	28.2	36.1	37.0	34.4
Three	12.3	7.8	13.3	10.8	10.7
Four or More	5.9	3.0	7.1	5.4	5.0
Subtotal	90.2	76.6	89.2	86.4	84.7
None	9.8	23.4	10.8	13.6	15.3
Total	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	1.75	1.31	1.79	1.65	1.59
	By Ownership Group				
One	31.0	37.8	15.8	15.4	100.0
Two	36.5	28.6	17.6	17.3	100.0
Three	37.5	25.5	20.8	16.2	100.0
Four or More	38.2	21.1	23.5	17.2	100.0
None	20.7	53.2	11.9	14.2	100.0
All Households	32.4	34.9	16.7	16.0	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

FIGURE 2

PERCENT OF HOUSEHOLDS OWNING ONE OR MORE VEHICLES BY RESIDENCE INSIDE OR OUTSIDE SMSAs



Source: Based on data presented in Table 2

are higher in non-SMSA households (1.72 vehicles) than central city SMSA households (1.31 vehicles), but are very similar to rates for SMSA noncentral city households (1.75 vehicles). Of non-SMSA households in areas under 5,000, 10.8 percent do not own vehicles, compared to 13.6 percent of non-SMSA households over 5,000, and 1.79 vehicles compared to 1.65. Vehicle ownership by location inside or outside SMSA's is also illustrated in Figure 2.

Income

Not surprisingly, vehicle ownership increases directly with income. As shown both in Table 3 and Figure 3, 46.3 percent of households with annual incomes under $5,000 own no vehicles, while only 1.6 percent of households in the $25,000 to $35,000 range are without vehicles. Two-vehicle households are most commonly those with incomes of $15,000 to $25,000. Number of vehicles per household grows steadily with income, from 0.73 for households under $5,000 to 2.06 for households with $15,000 to $25,000 income to 2.61 for households over $50,000. The average for all households is 1.59 vehicles.

The same trends are also evident in the bottom half of Table 3, which shows ownership across income groups. Households under $5,000 account for 19.7 percent of all households, yet comprise 59.6 percent of all nonvehicle households. In contrast, households over $25,000 account for only 12.4 percent of all households, but 25.0 percent of all three-vehicle and 34.7 of four-or-more-vehicle households.

Household Composition

Number of Adults. Household vehicle ownership is directly related to the number of adults* in the household. Both Table 4 and Figure 4 show that incidence of vehicle ownership and number of vehicles owned increases with number of adults. Of all households with one adult, 39.2 percent do not own vehicles, while only 7.5 percent or less of two-or-more-adult households do not

* For the purpose of this study, adults are defined as persons 16 years of age and older.

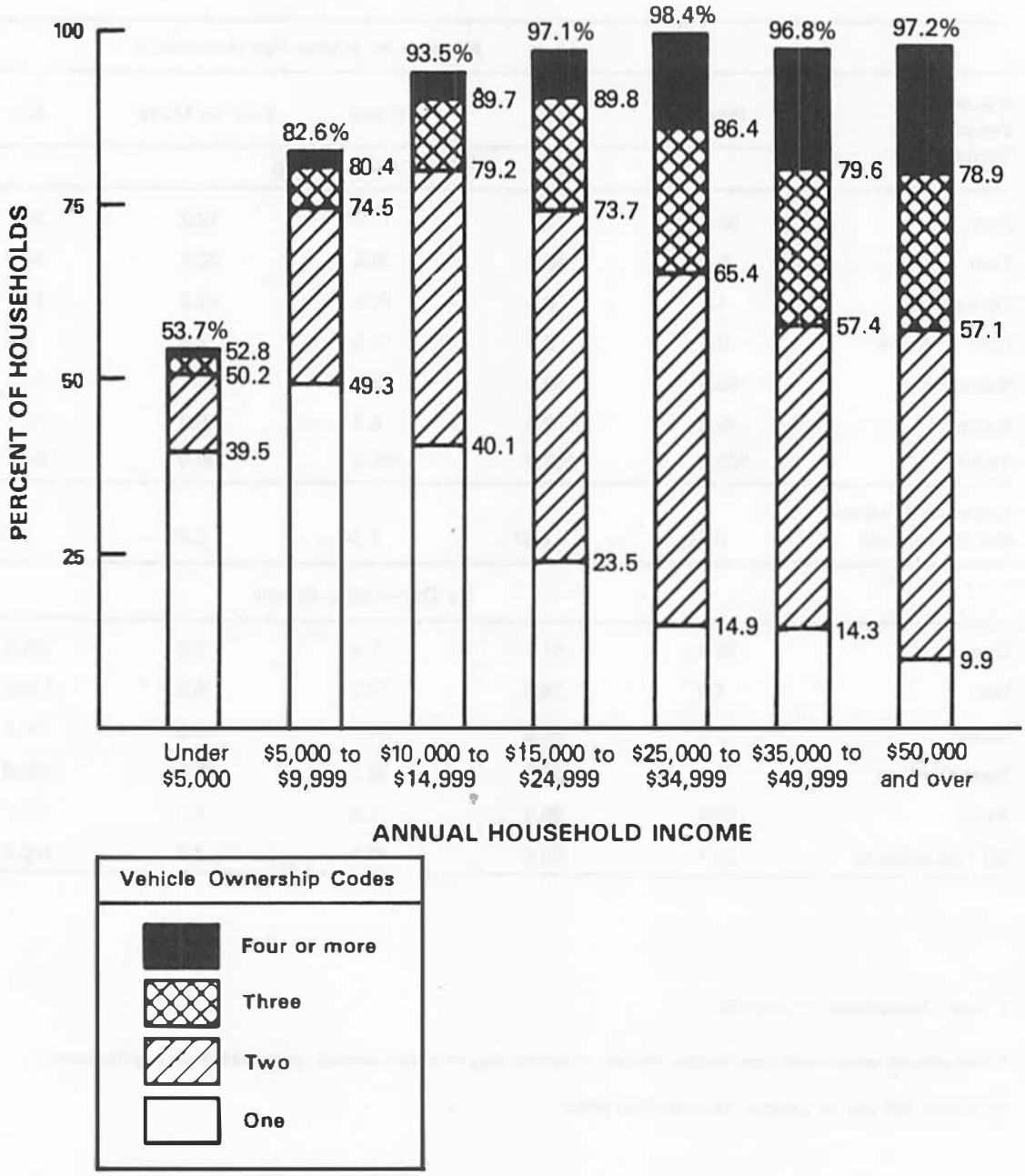
Table 3. Percent of Households by Vehicle Ownership* and Annual Household Income

Household Vehicle Ownership	Annual Household Income							
	Less Than $5,000	$5,000 to 9,999	$10,000 to 14,999	$15,000 to 24,999	$25,000 to 34,999	$35,000 to 49,999	$50,000 or More	All Income Groups
	Within Income Group							
One	39.5	49.3	40.1	23.5	14.9	14.3	9.9	34.6
Two	10.7	25.2	39.1	50.2	50.5	43.1	47.2	34.4
Three	2.6	5.9	10.5	16.1	21.0	22.2	21.8	10.7
Four or More	0.9	2.2	3.8	7.3	12.0	17.2	18.3	5.0
Subtotal	53.7	82.6	93.5	97.1	98.4	96.8	97.2	84.7
None	46.3	17.4	6.5	2.9	1.6	3.2	2.8	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	0.73	1.27	1.67	2.06	2.37	2.49	2.61	1.59
	By Ownership Group							
One	22.4	31.1	24.6	16.8	3.4	1.3	0.4	100.0
Two	6.1	16.0	24.2	36.1	11.7	3.8	2.1	100.0
Three	4.8	12.1	21.0	37.1	15.6	6.3	3.1	100.0
Four or More	3.4	9.6	16.0	36.3	18.9	10.3	5.5	100.0
None	59.6	24.8	9.1	4.8	0.8	0.6	0.3	100.0
All Households	19.7	21.8	21.3	24.8	7.9	3.0	1.5	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

FIGURE 3
PERCENT OF HOUSEHOLDS OWNING
ONE OR MORE VEHICLES BY ANNUAL HOUSEHOLD INCOME



Source: Based on data presented in Table 3

Table 4. Percent of Households by Vehicle Ownership* and Number of Adults**

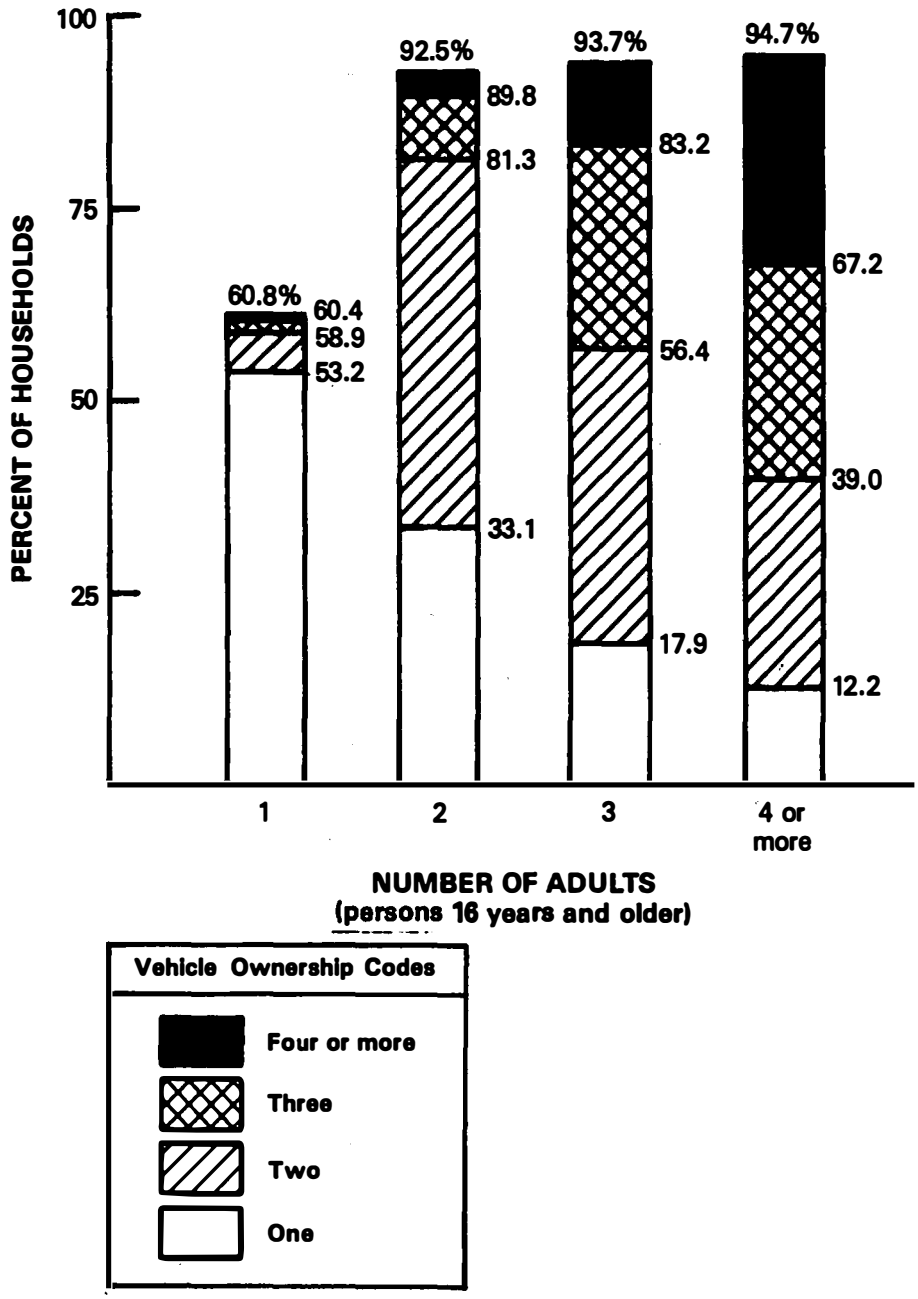
Household Vehicle Ownership	Number of Adults Per Household				
	One	Two	Three	Four or More	All
	Within Adult Group				
One	53.2	33.1	17.9	12.2	34.6
Two	5.7	48.2	38.5	26.8	34.4
Three	1.5	8.5	26.8	28.2	10.7
Four or More	0.4	2.7	10.5	27.5	5.0
Subtotal	60.8	92.5	93.7	94.7	84.7
None	39.2	7.5	8.3	5.3	15.3
Total	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	0.71	1.67	2.24	2.81	1.59
	By Ownership Group				
One	39.4	51.1	8.9	2.6	100.0
Two	4.2	74.8	15.2	5.8	100.0
Three	3.7	42.8	34.0	19.5	100.0
Four or More	2.2	29.0	28.3	40.5	100.0
None	65.7	26.1	5.8	2.8	100.0
All Households	25.7	53.4	13.5	7.4	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

** Adults defined as persons 16 years and older

FIGURE 4
PERCENT OF HOUSEHOLDS OWNING
ONE OR MORE VEHICLES BY NUMBER OF ADULTS PER HOUSEHOLD



Source: Based on data from Table 4

own vehicles. Number of vehicles owned increases from 0.71 vehicles for one-adult households, 1.67 for two-adult households, 2.24 for three-adult households and 2.81 for households with four adults or more.

The bottom of Table 4 highlights multivehicle ownership trends. One-adult households comprise only 25.7 percent of all households, though they account for 65.7 percent of zero-vehicle households. In contrast, households with three or more adults comprise 20.9 percent of all households, but account for 53.5 percent of three-vehicle households and 68.8 percent of households with four vehicles or more.

Number of Licensed Drivers. As with household adults, the number of licensed drivers in the household is closely related to vehicle ownership. Table 5 and Figure 5 show that both the percent of households owning vehicles and the number of vehicles owned are linked to the number of drivers. Of one-driver households, 9.6 percent are without vehicles, while less than 1 percent of households with three or more drivers are without vehicles. A somewhat surprising finding is that 9.0 percent of all households without any licensed drivers own at least one motor vehicle. Average number of vehicles per household closely follows the number of drivers, ranging from 1.21 for one-driver households, 1.97 for two-driver households, 2.78 for three-driver households and 3.47 for households with four or more drivers.

Relationship of Licensed Drivers per Household to Annual Household Income. The relationships presented in Tables 3 and 5 show that vehicle ownership is strongly tied to both household income and the number of household drivers. Of course, these characteristics are highly interrelated since both income and the number of drivers are determined in large part by the number of adults and number of workers in the household. Table 6 illustrates the relationship between income and drivers, in particular how the number of drivers increases directly with household income.

The top half of Table 6 shows that while households with incomes under $5,000 comprise 19.7 percent of all households, these households account for 62.2 percent of all households without drivers. For households with incomes over

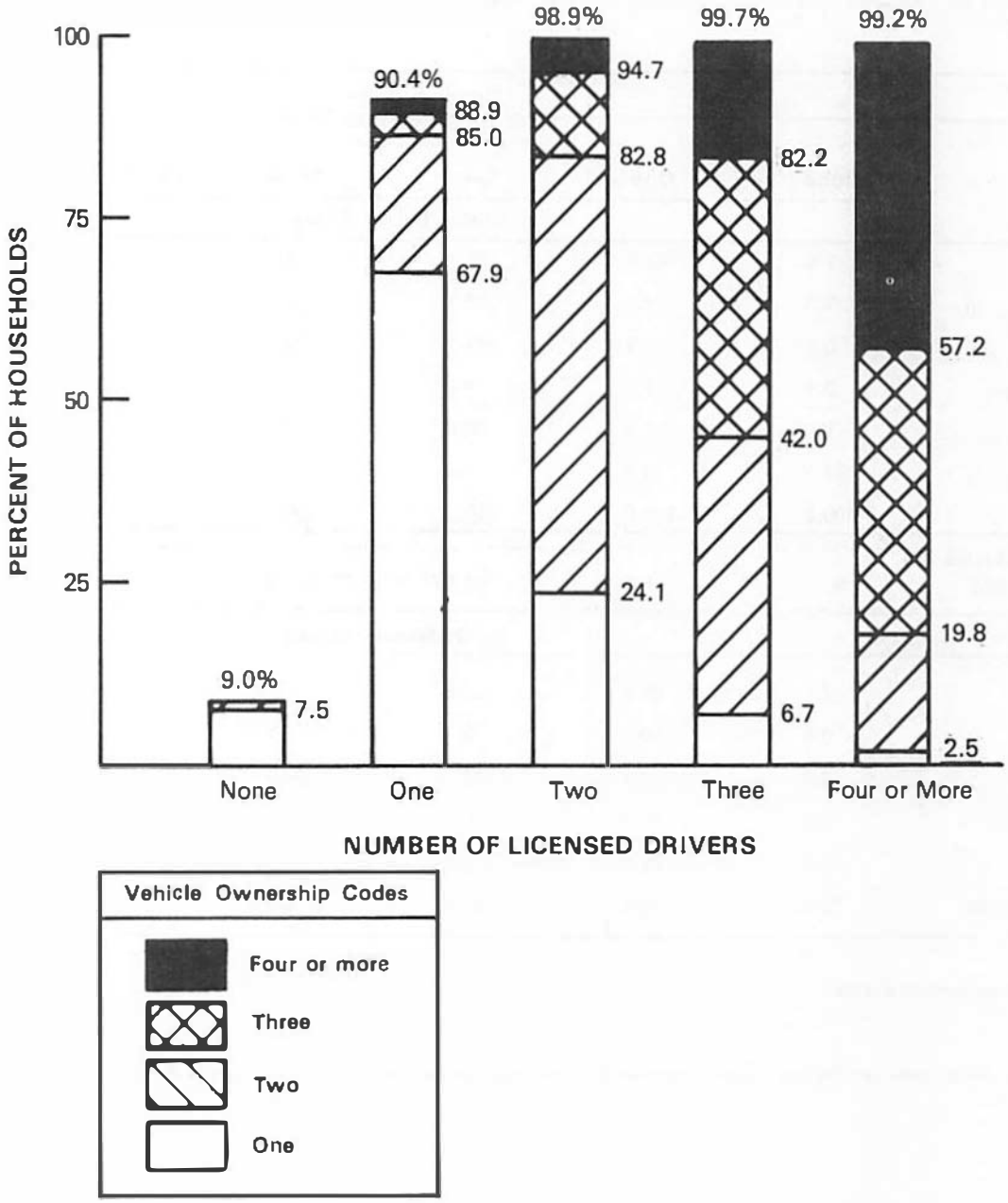
Table 5. Percent of Households by Vehicle Ownership* and Number of Licensed Drivers

Household Vehicle Ownership	Number of Drivers					
	None	One	Two	Three	Four or More	All
	Within Driver Group					
One	7.5	67.9	24.1	6.7	2.5	34.6
Two	1.3	17.1	58.7	35.3	17.3	34.4
Three	0.1	3.9	11.9	40.2	37.4	10.7
Four or More	0.1	1.5	4.2	17.5	42.0	5.0
Subtotal	9.0	90.4	98.9	99.7	99.2	84.7
None	91.0	9.6	1.1	0.3	0.8	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	0.14	1.21	1.97	2.78	3.47	1.59
	By Ownership Group					
One	2.7	65.7	29.8	1.6	0.2	100.0
Two	0.5	16.7	73.1	8.4	1.3	100.0
Three	0.2	12.4	47.7	30.8	8.9	100.0
Four or More	0.3	10.3	36.2	28.5	24.7	100.0
None	75.6	21.1	3.0	0.2	0.1	100.0
All Households	12.7	33.6	42.8	8.2	2.7	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

FIGURE 5
PERCENT OF HOUSEHOLDS OWNING
ONE OR MORE VEHICLES BY NUMBER OF HOUSEHOLD DRIVERS



Source: Based on date from Table 5

Table 6. Percent of Households by Number of Licensed Drivers and Annual Household Income

	Within Driver Group					
Annual Income	None	One	Two	Three	Four or More	All
Less than $5,000	62.2	24.7	7.1	3.8	4.9	19.7
$5,000 to 9,999	24.3	29.1	18.0	13.7	5.8	21.8
$10,000 to 14,999	7.8	22.5	25.3	18.2	15.0	21.3
$15,000 to 24,999	4.0	16.9	33.6	38.3	38.7	24.8
$25,000 to 34,999	1.1	4.2	10.5	15.9	21.6	7.9
$35,000 to $49,969	0.4	1.8	3.5	7.0	10.5	3.0
$50,000 or more	0.2	0.8	2.0	3.1	3.5	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0†
	By Income Group					
Less than $5,000	40.2	42.1	15.4	1.6	0.7	100.0
$5,000 to 9,999	14.2	44.7	35.3	5.1	0.7	100.0
$10,000 to 14,999	4.6	35.5	51.0	7.0	1.9	100.0
$15,000 to 24,999	2.1	22.9	58.0	12.7	4.3	100.0
$25,000 to 34,999	1.8	17.8	56.7	16.4	7.3	100.0
$35,000 to $49,969	1.5	20.4	49.5	19.1	9.5	100.0
$50,000 or more	1.4	18.8	57.0	16.6	6.2	100.0
All Households	12.7	33.6	42.8	8.2	2.7	100.0†

† Total Households = 75,412,000

$15,000, however, two or more drivers per household is common. The relation between income and drivers may also be measured by the median income of driver groups. Households without licensed drivers have a median income under $5,000. Households with one or two drivers have a median income in the $10,000 to $15,000 range and those with three or more drivers in the $15,000 to $25,000 range. From a different perspective, the bottom half of Table 6 shows that the proportion of households without licensed drivers is 40.2 percent for households with annual incomes under $5,000, but only 1.4 percent for households with incomes over $50,000.

Household Structure

Much attention has been given to the household as an important entity in travel decisionmaking and trip production. The structure of the household in terms of size, family relationships, stage of life cycle and other factors says much about the household's need for travel, and hence its travel behavior. Numerous measures have been devised to distinguish between the basic types of households. A classification utilized by the Federal Highway Administration (FHWA) uses 10 household categories. Households are distinguished by whether they are single or multiple-adult units, whether there are dependent children, the age of the youngest child if there are children, or, if no children, whether the household head is employed or retired.

Table 7 presents data on vehicle ownership according to the FHWA household structure classification. The classification highlights some intuitive relationships. Single-adult household arrangements account for the greatest proportion of zero-vehicle households. Single-adult households where the individual is retired and without children are those most often without vehicles. Of these households 47.2 percent are without vehicles, compared to 15.3 percent for all households and 38.4 percent for single-adult households where the resident adult is in the work force. In single-adult households with children, the age of the youngest child bears a relationship to vehicle ownership. Of the single-adult households where the youngest child is under 6 years of age, 44.4 percent own no vehicle, compared to 25.6 percent of households where the youngest child is between 6 and 16 years, and 21.2 percent where the youngest child is 16 or over.

Table 7. Percent of Households by Vehicle Ownership* and Household Structure

Household Vehicle Ownership	Household Structure										
	Single adult, no children	Two or more adult, no children	Single adult, youngest child under 6	Two or more adult, youngest child under 6	Single adult, youngest child 6 to 15	Two or more adult, youngest child 6 to 15	Single adult, youngest child 16 or older	Two or more adult, youngest child 16 or older	Single adult, retired, no children	Two or more adult, retired, no children	All
	Within Household Structure										
One	53.2	29.7	49.5	30.3	53.3	17.8	35.0	11.3	49.0	54.9	34.6
Two	6.2	47.0	5.3	53.4	14.2	47.4	33.0	33.1	3.1	27.1	34.4
Three	1.7	10.6	0.5	9.8	5.2	20.1	7.7	31.8	0.5	3.5	10.7
Four or More	0.5	4.1	0.3	2.9	1.7	11.6	3.1	18.4	0.2	1.1	5.0
Subtotal	61.6	91.4	55.6	96.4	74.4	96.9	78.8	94.6	52.8	86.6	84.7
None	38.4	8.6	44.4	3.6	25.6	3.1	21.2	5.4	47.2	13.4	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	0.73	1.74	0.63	1.80	1.07	2.27	1.38	2.59	0.58	1.24	1.59
	By Ownership Group										
One	27.6	19.2	2.8	13.5	5.7	9.2	2.2	2.2	5.0	12.6	100.0
Two	3.3	30.7	0.3	24.2	1.5	24.8	2.1	6.5	0.3	6.3	100.0
Three	2.9	22.5	0.1	14.3	1.8	33.8	1.6	20.2	0.2	2.6	100.0
Four or More	1.6	18.3	0.1	9.1	1.3	41.5	1.3	24.9	0.1	1.8	100.0
None	45.0	12.5	5.6	3.7	6.2	3.7	3.0	2.4	10.9	7.0	100.0
All Households	18.0	22.4	1.9	15.5	3.7	18.0	2.2	6.8	3.5	8.0	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

The highest incidence of vehicle ownership occurs among multiple-adult households with children. Households that do not own a vehicle comprise only 3.6 percent of all multiple-adult households with the youngest child under 6, 3.1 percent of households with the youngest child between 6 and 16, and 5.4 percent of households with the youngest child 16 or over. Actual ownership rates in terms of vehicles per household range from 0.58 vehicles for single-adult retired households to 2.59 for multiple-adult households with the youngest child 16 or older. The average vehicle ownership rate of single-adult households ranges from 0.58 where the adult is retired to 1.38 where the youngest child is 16 or older. Ownership rates in multiple-adult households range from 1.24 where the household head is retired to 2.59 where the youngest child is 16 or older.

With regard to multivehicle ownership patterns, Table 7 shows that most single-adult households that own vehicles have only one vehicle. Fewer than 10 percent of all single-adult households own more than one vehicle, with the exception of where the youngest child is 6 to 15 (21.1 percent own two or more vehicles) or 16 or older (43.8 percent own two or more vehicles). In contrast, multiple-adult households own an average of more than one vehicle per household. More than two-thirds of all multiple-adult households with children own two or more vehicles. The proportion is somewhat less for multiple-adult households without children, and lowest for those where the adult serving as household head is retired (31.7 percent own two or more vehicles).

Education of Household Head

Vehicle ownership increases with the level of educational attainment of the household head, principally because level of education is also tied to level of income. Both incidence of vehicle ownership and ownership rates increase with level of education. As shown in Table 8, 61.3 percent of households whose head did not attend school are without vehicles. This proportion drops to 33.2 percent for households where the head attended elementary school, 14.2 percent for those attending high school, and 7.4 percent for those attending college. Average number of vehicles owned is 0.52 for those households where the household head did not attend school, 1.13 for those that attended elementary school, 1.61 for those that attended high school, and 1.79 for those with college level attainment.

Table 8. Percent of Households by Vehicle Ownership* and Education of Household Head

Household Vehicle Ownership	Education of Household Head				
	Within Education Group				
	Did Not Attend School	Attended or Completed Elementary School	Attended or Completed High School	Attended or Completed College	All
One	28.4	35.1	35.9	32.9	34.6
Two	7.9	22.2	33.3	42.0	34.4
Three	1.6	6.5	11.1	12.2	10.7
Four or More	0.8	3.0	5.5	5.5	5.0
Subtotal	38.7	66.8	85.8	92.6	84.7
None	61.3	33.2	14.2	7.4	15.3
Total	100.0	100.0	100.0	100.0	100.0†
Average Vehicles per Household	0.52	1.13	1.61	1.79	1.59
	By Ownership Group				
One	0.5	17.5	48.0	34.0	100.0
Two	0.1	11.2	44.9	43.8	100.0
Three	0.1	10.6	48.3	41.0	100.0
Four or More	0.1	10.5	50.5	38.9	100.0
None	2.2	37.6	43.0	17.2	100.0
All Households	0.6	17.3	46.3	35.8	100.0†

† Total Households = 75,412,000

* Includes all motor vehicles (autos, trucks, motorcycles, and mopeds) owned or available on regular basis.

Relationships between educational level and multivehicle ownership are better seen in the bottom half of Table 8. Households whose heads attended no more than elementary school account for 17.9 percent of all households but are 39.8 percent of all nonvehicle owning households and only 11.1 percent of all multivehicle households. Households whose heads attended high school or above account for 82.1 percent of households, but 89.3 percent of all three-vehicle households and 89.4 percent of all households with four or more vehicles.

Access to Public Transportation

Access to public transportation may be measured in several ways. In the NPTS households were asked the general question of whether public transportation, other than taxis, was available within two miles of their home. A comparison of access to public transportation with household vehicle ownership is shown in Table 9.

The results show that 61.1 percent of all households think that public transportation is available according to the NPTS definition, while 36.0 percent do not, and 2.9 percent do not know. Only 9.1 percent of households where public transportation is considered not available owned no vehicles, while 19.0 percent of households with public transportation considered available are without a vehicle. Households with public transportation available average 1.43 vehicles per household, compared to 1.85 for households without public transportation. An important consideration in these relationships is that households residing in urban areas, and in particular within central cities where vehicle ownership rates are lower, are more likely to have public transportation available.

The same relationships expressed in slightly different format are seen in the bottom half of Table 9. Households without public transportation comprise 36.0 percent of all households, but they account for 42.1 percent of all two-vehicle households, 46.8 percent of three-vehicle households, and 53.5 percent of four-or-more-vehicle households. Households with public transportation comprise 61.1 percent of all households, but account for 76.1 percent of all nonvehicle households, 64.7 percent of all one-vehicle, 54.7 percent of all two-vehicle, 50.6 percent of all three-vehicle and 44.1 percent of all four-or-more-vehicle households.

Table 9. Percent of Households by Vehicle Ownership* and Availability of Public Transportation

Household Vehicle Ownership	Availability of Public Transportation			
	Yes	No	Don't Know	All
	Within Availability Group			
One	37.2	30.5	37.3	34.6
Two	31.2	39.5	38.8	34.4
Three	8.9	13.6	9.6	10.7
Four or More	3.7	7.3	4.3	5.0
Subtotal	81.0	90.9	90.0	84.7
None	19.0	9.1	10.0	15.3
Total	100.0	100.0	100.0	100.0†
Average Vehicles per Household	1.43	1.85	1.63	1.59
	By Ownership Group			
One	64.7	32.2	3.1	100.0
Two	54.7	42.1	3.2	100.0
Three	50.6	46.8	2.6	100.0
Four or More	44.1	53.5	2.4	100.0
None	76.1	22.1	1.8	100.0
All Households	61.1	36.0	2.9	100.0†

† Total Households=75,117,000 (75,412,000 less 295,000 not reporting Public Transportation Availability)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

Housing Type

In the NPTS housing alternatives are categorized as single-family detached, single-family attached to one or more structures, single-family trailer or mobile home, and multifamily with either two to four units or more than four units. As shown in Table 10, the majority of households (67 percent) reside in single-family detached homes. This group also has the highest incidence and rate of vehicle ownership. Only 8.2 percent of all households in single-family detached homes own no vehicles, which is comparable only to mobile home households at 9.3 percent. Households in multifamily housing have the lowest incidence of vehicle ownership. Of households in multifamily housing with two to four units, 30.7 percent have no vehicles, and 35.1 percent of those in multifamily with more than four units have no vehicles. Households in single-family attached housing, typically townhouses and rowhouses, display ownership characteristics midway between the single-family detached and multiunit groups. Of households in this group, 24.9 percent own no vehicles. Expressed another way, ownership rates range from a low of 0.88 vehicles per household for multifamily housing to a high of 1.86 vehicles for single-family detached, with an average for all housing types of 1.59. Even more revealing is the predominance of multivehicle ownership by single-family detached households. Of all households in single-family detached housing, 62.1 percent own two or more vehicles. And, as seen in the bottom of Table 8, while single-family detached households are 67 percent of all households, this group accounts for 80.1 percent of all two-vehicle, 88.0 percent of all three-vehicle and 91.2 percent of all four-or-more vehicle households. This may occur because single family detached accommodations are more common in low-density environments, typical of nonurban or suburban settings, where the need for private vehicles is greatest. In contrast, multifamily housing is most common in larger urban areas, where density is higher and activities may be accessed through means other than private vehicles. Also, households in single-family detached housing generally have higher incomes than households in other housing types.

B. CHARACTERISTICS OF HOUSEHOLD VEHICLES

This section explores the physical and other important characteristics of household-owned vehicles. These characteristics include vehicle type (i.e., auto,

Table 10. Percent of Households by Vehicle Ownership* and Housing Type

Household Vehicle Ownership	Housing Type						
	Single Family Detached	Single Family Attached	Single Family Mobile Home	Multi-Family, 4 units or less	Multi-Family, more than 4 units	Other	All
	Within Housing Type						
One	29.7	38.6	49.9	44.8	45.8	36.4	34.6
Two	41.2	29.2	31.2	19.4	16.0	18.1	34.4
Three	14.0	6.3	6.8	3.7	2.3	3.2	10.7
Four or More	6.9	1.0	2.8	1.4	0.8	0.7	5.0
Subtotal	91.8	75.1	90.7	69.3	64.9	58.4	84.7
None	8.2	24.9	9.3	30.7	35.1	41.6	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Average Vehicles Per Household	1.86	1.20	1.45	1.01	0.88	0.85	1.69
	By Ownership Group						
One	56.2	4.7	5.9	14.2	17.6	1.4	100.0
Two	80.1	3.5	3.8	6.0	6.0	.6	100.0
Three	88.0	2.6	2.9	3.7	2.8	0.0	100.0
Four or More	91.2	1.0	2.4	3.0	2.0	.4	100.0
None	36.2	6.8	2.5	21.3	30.1	3.1	100.0
All Households	67.0	4.0	4.3	10.6	13.0	1.1	100.0†

† Total Households = 72,601,000 (75,412,000 less 2,811,000 not reporting Housing Type)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis.

station wagon, van, etc.), model year, method of ownership, and various physical characteristics of vehicles such as body weight, fuel economy (MPG), engine size (number of cylinders), transmission type (automatic or standard), and air conditioning.

Two important aspects of the data must be described before proceeding with analysis in order to avoid confusion and possible misuse of the relationships. First, it must be noted that vehicle ownership applies to all motor vehicles that have either been purchased by household members or are available to the household on a regular basis. Examples of vehicles not owned but available to the household include company-owned vehicles, vehicles obtained through lease or rental arrangements, and vehicles owned by others but used regularly by the household. These vehicles are included within the definition of household vehicle ownership because they contribute importantly to household travel behavior.

The second aspect of the data requiring qualification is that physical characteristics such as weight, engine size and MPG are presented for "auto" vehicles only (i.e., autos, station wagons, and taxis for personal use). This is because physical characteristics data was not acquired from survey respondents, but rather compiled from external data as matched through make and model information. Because physical attribute data in NPTS is available for only a sample of vehicles, the limitations of this sample permit analysis only for auto-type vehicles. In cases where the analysis becomes too fine grained to be supported by the sample size, potentially misleading results are not reported. In all cases, it should be noted that physical characteristics presented are dependent upon assumed sample representativeness.

Types of Vehicles Owned by Households

An estimated 120,098,000 motor vehicles were owned by or available to households on a regular basis in 1977, for an average of 1.6 vehicles per household. As seen in Table 11, the vast majority of these vehicles are autos. Autos, which include standard autos, station wagons, and personal-use taxis, account for 79.6 percent of all household vehicles. The next largest share consists of trucks and vans, including pickups (without camper), vanbus/minibus, other vans and other trucks, accounting

Table 11. Distribution of Household Vehicles* by Type

Vehicle Type	Percent of Vehicles
Autos	
Standard	71.4
Station Wagon	8.2
Taxi (personal use)	— †
Subtotal	79.6
Trucks and Vans	
Vanbus/Minibus	2.0
Other Van	0.8
Pickup	12.0
Other Truck	1.3
Subtotal	16.1
Recreational Vehicles	
Pickup W/Camper	0.8
Camper Coach	0.4
Motorcycle	2.7
Moped	0.2
Subtotal	4.1
Other Vehicles	0.2
Total Vehicles ‡	100.0

† Less than 0.1 percent

‡ Total vehicles = 120,098,000

* Includes all motor vehicles (autos, trucks, motorcycles and mopeds) owned or available on regular basis

for 16.1 percent of all vehicles. The third largest share is "recreational vehicles" including pickups with camper, camper coach, and motorcycles and mopeds, which comprise 4.1 percent of all vehicles. It should be noted that "recreational vehicles" is an arbitrary designation, since many van-type vehicles are principally camper/recreational vehicles, while pickups with camper units may be principally work-use vehicles.

Profile of Household Auto Characteristics

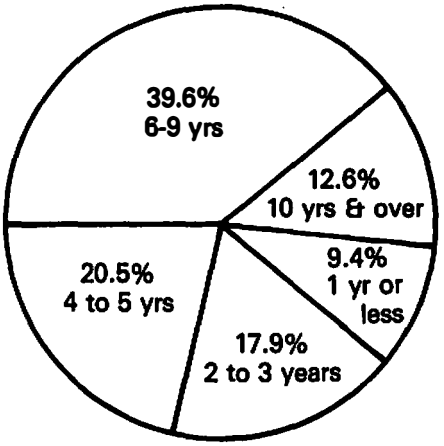
As mentioned earlier in the introduction, for reasons of sample size the reporting of many physical characteristics of household vehicles is limited to auto vehicles. Figure 6, therefore, presents a profile of the household auto, which accounts for almost 80 percent of all household vehicles. Autos are defined in this presentation as standard autos, station wagons, and personal-use taxis.

Figure 6-a shows that the average household auto in 1977 was 6.4 years old. Only 9.4 percent of all autos are late model (1 year old or less), and 27.3 percent are 3 years or under. The majority of autos, 52.2 percent, are more than 5 years old.

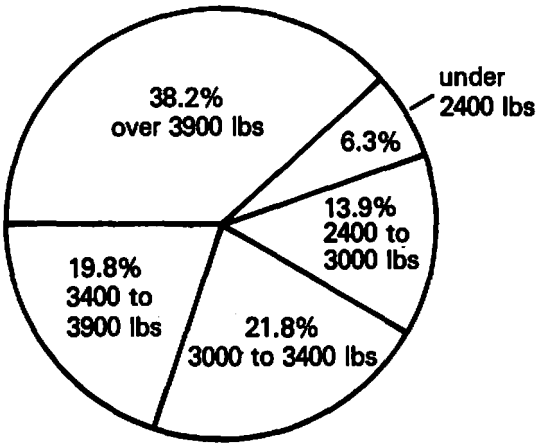
Figure 6-b portrays the curb weight (weight in normal use without passengers) distribution of the private auto stock and shows the continuing preponderance of large cars through 1977. Of all autos in 1977, 58 percent weighed more than 3,400 pounds, presumably due to the significant number of older vehicles (more than 5 years) that have been retained by households. Only 20.2 percent of all autos in 1977 weighed less than 3,000 pounds. The average curb weight of all autos was 3,640 pounds.

Age and weight of autos is highly correlated with engine size and fuel economy, hence, large engines and poor fuel economy are expected characteristics of the 1977 auto stock. Figure 6-c indicates that almost two-thirds, or 64.3 percent, of all autos are equipped with an engine of eight or more cylinders, while only 16.1 percent are equipped with engines of four cylinders or less. Average automobile engine size in 1977 was 6.97 cylinders. However, the predominance of large cars in the auto stock is not quite as apparent in terms of average fuel economy, due to substantial improvements in U.S. autos after 1975. Aggregate fuel consumption (using combined city and highway driving conditions) for the 1977 stock is estimated

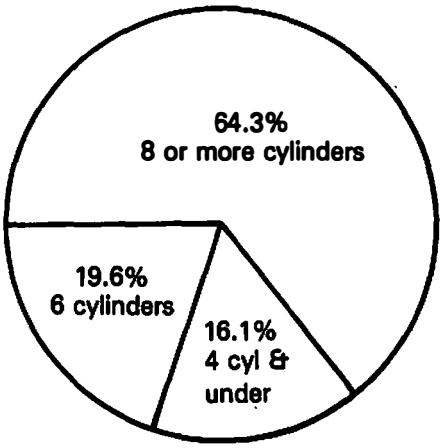
Figure 6.
AUTO* CHARACTERISTICS PROFILE



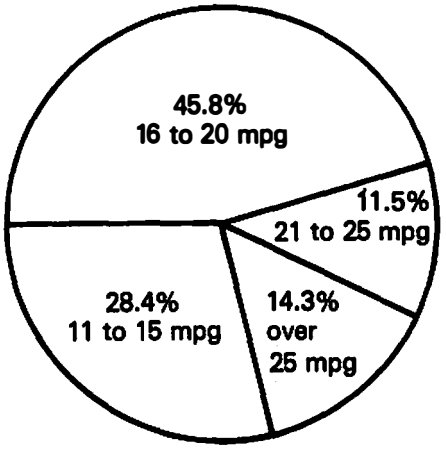
a. **Vehicle Age**
(Avg. Age=6.4 Years)



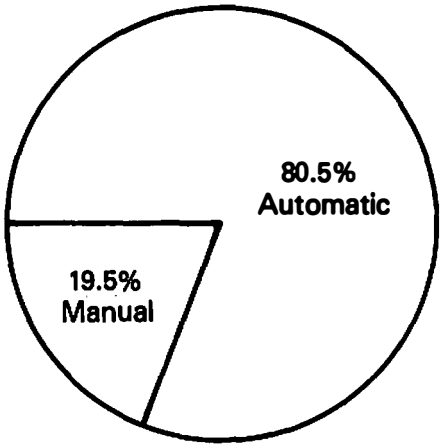
b. **Curb Weight**
(Avg. Weight=3640 Pounds)



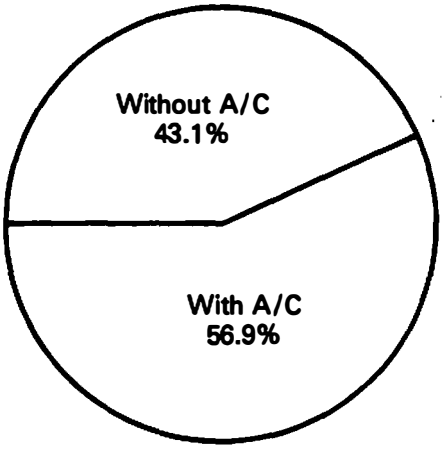
c. **Engine Size-Number Cylinders**
(Avg. Size=6.97 cylinders)



d. **Average Combined Highway and City MPG**
(Avg. MPG=19.0)



e. **Type Transmission**



f. **Air Conditioning**

*** Auto vehicles only, including standard auto, station wagon and personal use taxi**

Source: 1977 NPTS Survey

at 19 miles per gallon (MPG). More than two-thirds of the fleet (71.6 percent) had average fuel economy in excess of 15 MPG. These gas mileage figures were obtained from the EPA Gas Mileage Guide, and as such may not represent actual MPG performance. In particular, factors such as vehicle accessories and the tendency of mileage to deteriorate with advancing vehicle age* are not captured in the EPA estimates.

In addition to weight and engine size, accessory features such as transmission type and air conditioning affect fuel economy and are therefore important vehicle characteristics. Figure 6-e illustrates the significant proportion (80.5 percent) of autos that are equipped with automatic transmission, closely tied to the market share held by large cars. Also, the majority of private cars, 56.9 percent were equipped with air conditioning in 1977, as shown by Figure 6-f.

Characteristics of Autos by Model Year

Table 12 presents the profile of automobile characteristics broken down by model year. The table shows that average curb weight is lowest for the most recent model year, 3,467 pounds for 1978 models compared to the average of 3,640 pounds for all model years. Autos in the model years 1972 to 1975 are of above average weight, reaching a high of 3,887 pounds for 1974 autos. Pre-1972 autos are generally of below average weight. Engine size, expressed in number of cylinders, averages 7.0 cylinders for all autos. The highest proportions of large engined cars occurs in the pre-1971 models. Also 1972-1973 and 1977-1978 stocks have above average number of cylinders, although in late model cars these engines are probably smaller units (in terms of cubic inch displacement) with improved MPG characteristics. The percent of autos with air conditioning has grown substantially over time, climbing from 30.5 percent for pre-1969 models to 76.1 percent for 1977 and 1978 models. There are no apparent trends in the incidence of automatic transmission, with an average of 80.5 percent for all models.

*MPG estimates correspond to year of vehicle manufacture.

Table 12. Selected Characteristics of Autos* by Model Year

Model Year	Average Curb Wt. (pounds)	Average No. Cylinders	% with Air Cond.	% with Auto Transm.
1978	3467	7.05	76.1	80.7
1977	3557	7.03	76.1	84.6
1976	3627	6.86	70.0	81.9
1976	3679	6.83	67.9	80.6
1974	3887	6.76	63.2	79.5
1973	3711	7.06	65.9	82.0
1972	3687	7.06	61.8	82.2
1971	3512	6.94	58.1	80.0
1970	3533	7.24	54.9	84.1
1969	3656	7.20	49.0	82.1
1968 and Earlier	3504	7.10	30.5	75.3
All	3640	6.97	56.9	80.5

* Includes only auto vehicles (standard auto, station wagon, and personal use taxi) owned or available on regular basis

C. RELATIONSHIPS BETWEEN METHOD OF OWNERSHIP AND CHARACTERISTICS OF HOUSEHOLD VEHICLES

Household vehicles are defined as those either owned by household members or available to the household through other means on a regular basis. For vehicles owned by household members, a distinction is made between those purchased new versus those purchased used. Vehicles not owned by the household are further qualified as leased, rental, company-owned or other. The method of ownership is often closely tied to the type and characteristics of the vehicle, as shown in the relationships discussed in the following subsections.

Relationship Between Type of Vehicle and Method of Ownership

Table 13 illustrates the methods by which the various types of private vehicles are owned by or available to households. This relationship is further broken down by whether there is one or more than one vehicle owned or maintained by the household (tabulated as single or multivehicle household).

Overall, 93.7 percent of all household vehicles are owned outright through purchase by household members, and the majority of these, 50 percent, were purchased as used vehicles. Vehicles available to the household through other means account for the remaining 6.3 percent of household vehicles. The majority of these are company-owned vehicles (3.6 percent), followed by those available through other means, (2.0 percent), leased vehicles (0.6 percent) and rental vehicles (0.1 percent).

Recreational-type vehicles, including camper coaches, pickups with campers, motorcycles and mopeds are the vehicle types most commonly owned by households through purchase by household members. Virtually all of these vehicles situated in single-vehicle households were purchased by household members, while more than 94 percent (except motorcycles) in multivehicle households were purchased. Other vans (not vanbuses) and taxis are the vehicle types least often owned through purchase. Vehicles are owned through purchase at a consistently higher rate in single-vehicle households, where over 95 percent of all vehicles have been purchased (except for vans and taxis). Standard autos, vanbus minibus, other trucks, and camper coaches are the vehicle types most commonly purchased new,

while station wagons, other vans, pickups and motorcycles and mopeds are most commonly purchased used. In almost all cases, the proportion of vehicles purchased new is greater in single-vehicle households.

Vans, personal-use taxis, pickups and other trucks are the vehicle types most commonly owned by employers, and the incidence of company-owned vehicles of all types is most common in multivehicle households. Other vans are the vehicle type most frequently obtained through leases, although in terms of absolute numbers, auto-type vehicles constitute the majority of leased vehicles. Renting vehicles is the least common of all methods of ownership, although the types of vehicles most often procured in this manner are vanbus/minibus vehicles and camper coaches.

Model Year With Method of Ownership

Vehicles are more likely to have been purchased by the household as vehicle age increases. Table 14 shows that while 79.2 percent of all 1978 model year vehicles are purchased, the percentage of vehicles purchased grows steadily to 96 percent and over for vehicles of model year 1972 or earlier. Household-owned vehicles are more likely to have been purchased used rather than new as the model year grows older. Only 1.1 percent of 1978 model year vehicles owned by household members were purchased used compared to 80.5 percent for 1968 and earlier model years.

As further shown by Table 14 and Figure 7, a large share of late model vehicles are available to the household through means other than direct ownership. Of all 1977 and 1978 vehicles, 13.0 percent and 20.8 percent, respectively, are not owned by households but available through company ownership, lease, rental or other arrangements. The proportion of household vehicles not owned by the household declines sharply with vehicle age. The majority of company-owned (58.1 percent) and leased vehicles (79.7 percent) are 3 years old or less (model year no older than 1975).

Type of Vehicle by Model Year

Table 15 examines the variation in the types of vehicles owned by or available to households by model year. The top of Table 15 shows that the standard auto

Table 13. Percent of Vehicles by Method of Ownership and Type of Vehicle With Single or Multi Vehicle* Ownership

Method of Ownership	Type of Vehicle											
	Standard Automobile		Station Wagon		Vanbus/ Minibus		Other Van		Pickup		Pickup w/Camper	
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi
Owned by Household Mamber												
Purchased New	50.1	43.0	42.2	46.3	49.9	39.0	22.1	34.2	45.8	39.4	49.0	50.5
Purchased Used	46.6	51.5	53.5	46.4	48.2	47.0	57.5	44.9	50.7	50.6	51.0	45.2
Subtotal	96.7	94.5	95.7	92.7	98.1	86.0	79.6	79.1	96.5	90.0	100.0	95.7
Vehicles Available to Household												
Company-Owned	1.2	2.9	1.7	5.1	1.9	11.2	13.8	16.5	1.2	7.4	0.0	2.8
Leased	0.2	0.8	0.3	0.7	0.0	0.4	6.6	0.5	0.3	0.5	0.0	0.0
Rental	0.0	0.1	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Other	1.9	1.7	2.3	1.5	0.0	2.1	0.0	3.7	2.0	2.1	0.0	1.5
Subtotal	3.3	5.5	4.3	7.3	1.9	14.0	20.4	20.9	3.5	10.0	0.0	4.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent of Vehicles By Type	18.8	52.6	1.5	6.7	0.2	1.8	0.1	0.7	1.2	10.8	0.1	0.7

* Indicates number of vehicles owned by respective household. Includes all motor vehicles (autos, trucks, motorcycles, and mopeds). owned or available on regular basis.

Table 13. Percent of Vehicles by Method of Ownership and Type of Vehicle With Single or Multi Vehicle* Ownership (Continued)

Method of Ownership	Type of Vehicle												
	Other Truck		Camper Coach		Taxi (personal use)		Motorcycle		Moped		Other		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Owned by Household Member													
Purchased New	67.9	21.9	77.4	46.0	0.0	0.0	39.7	38.1	0.0	45.4	0.0	27.0	43.7
Purchased Used	32.1	54.4	22.6	48.3	49.1	0.0	60.3	49.2	100.0	52.8	100.0	57.4	50.0
Subtotal	100.0	76.3	100.0	94.3	49.1	0.0	100.0	87.3	100.0	98.2	100.0	84.4	93.7
Vehicles Available to Household													
Company-Owned	0.0	14.3	0.0	3.4	50.9	0.0	0.0	0.7	0.0	0.0	0.0	13.0	3.6
Leased	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.7	0.6
Rental	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1
Other	0.0	6.7	0.0	1.9	0.0	0.0	0.0	11.6	0.0	11.8	0.0	1.9	2.0
Subtotal	0.0	23.7	0.0	5.7	50.9	0.0	0.0	12.7	0.0	11.8	0.0	15.6	6.3
Total	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles By Type	0.0	1.3	0.0	0.4	0.0	0.0	0.1	2.6	0.0	0.2	0.0	0.2	100.0

† Total Vehicles= 120,045,000 (120,098,000 less 53,000 where type ownership not reported)

* Indicates number of vehicles owned by or available to respective households. Includes all motor vehicles (autos, trucks, motorcycles and mopeds) owned or available on regular basis

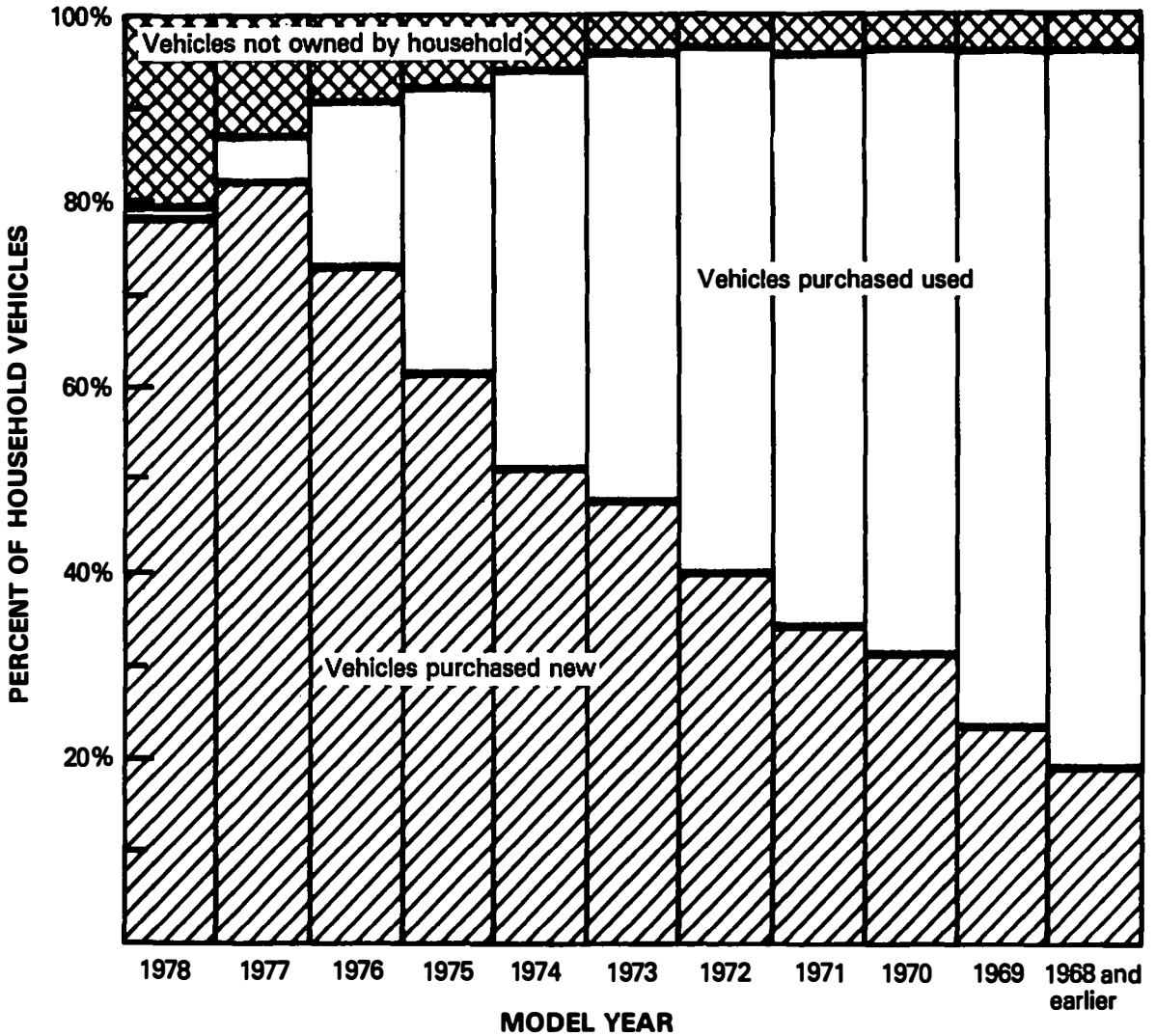
Table 14. Percent of Vehicles* by Method of Ownership and Model Year

Method of Ownership	Model Year											
	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968 and Earlier	All
Owned by Household Member												
Purchased New	78.3	81.9	73.4	60.6	50.7	47.8	39.8	34.3	31.1	23.5	18.8	44.1
Purchased Used	0.9	5.1	17.1	31.6	43.1	48.0	56.4	61.7	65.2	72.9	77.4	50.0
Subtotal	79.2	87.0	90.5	92.2	93.8	95.8	96.2	96.0	96.3	96.4	96.2	94.1
Company-Owned	16.0	9.2	6.8	5.8	3.9	2.3	1.8	1.9	1.6	1.9	1.5	3.6
Leased	3.2	2.7	1.5	0.8	0.2	0.2	0.2	0.2	0.3	0.0	0.2	0.6
Rental	0.7	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
Other	0.9	1.0	1.2	1.2	2.0	1.6	1.7	1.8	1.8	1.7	2.1	1.6
Subtotal	20.8	13.0	9.5	7.8	6.2	4.2	3.8	4.0	3.7	3.6	3.8	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent Vehicles by Model Year	1.0	8.7	9.9	8.2	9.7	10.4	9.6	7.1	6.8	6.5	22.1	100.0

† Total Vehicles = 115, 606,000 (120,098,000 less 4,492,000 where model year not reported)

* Includes all motor vehicles owned or available on regular basis.
However, model year virtually unreported for motorcycle/moped.

FIGURE 7
DISTRIBUTION OF HOUSEHOLD VEHICLES BY MODEL YEAR WITH METHOD OF OWNERSHIP AND WHETHER PURCHASED NEW OR USED



Source: Based on data from Table 14

accounts for a majority of all vehicle types (70.7 percent or greater) in each model year. The highest proportion of auto vehicles (77.8 percent) occurs in model year 1970 and 1971, or in other words for vehicles that are 7 to 8 years old. Station wagons are rather uniformly represented by model year at 8.5 percent overall, varying from a low of 7.1 percent in 1975 to a high of 10.3 percent in 1972. However, no trends in ownership by model year are apparent. Pickup trucks (without camper) show a distinct concentration among both the very new and very old vehicles. Pickups account for 18.0 percent of 1978 model vehicles and 15.6 percent of all vehicles made in 1968 and earlier, though they average only about 10 percent of the model years in between. The reasons for this are both the comparatively low scrappage rates of old trucks and the increasing market share of pickups in recent years. The growing market for recreational vehicles also explains the higher market shares of vanbus/minibus, other vans and camper coach vehicles since 1975. However, pickups with camper, a popular type of recreational vehicle, have not changed market share systematically over the same period.

The average age of all household vehicles is 6.6 years, as seen in the bottom half of Table 15. Standard autos (6.4 years), station wagons (6.2 years), pickups with camper (6.2 years), and other vans (6.4 years) all approximate the average vehicle age. Pickups are somewhat older than average (7.3 years), and other trucks are the oldest vehicles (11.6 years). Taxi (personal-use) vehicles are the newest, averaging 3.9 years.

Vehicles Purchased New or Used with Vehicle Ownership and Model Year

Household vehicles owned through purchase are less likely to have been purchased new as the vehicle gets older, and as the number of vehicles owned by the household increases. As seen in Table 16, 98.8 percent of all 1977 vehicles owned by households were purchased new, compared with only 19.7 percent of pre-1969 vehicles. Looking at this relationship using only vehicles purchased as a basis, 49.5 percent of all vehicles purchased by one-vehicle households were purchased new, compared to only 46.9 percent in two-vehicle households, 42.0 percent in three-vehicle households, and 38.6 percent in households with four vehicles or more.

Table 15. Percent of Vehicles* by Type of Vehicle and Model Year

Type of Vehicle	Vehicle Age (Years)												
	Less Than 1	1	2	3	4	5	6	7	8	9	10 or More		
	Within Model Year												
	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968 and Earlier	All	Average Vehicle Age (Years)
Standard Auto	70.7	70.7	71.8	74.2	75.5	75.4	74.7	77.7	77.9	75.1	71.0	73.7	6.4
Station Wagon	7.7	9.3	8.9	7.1	9.1	8.5	10.3	9.3	8.1	8.6	7.2	8.5	6.2
Vanbus/Minibus	1.2	3.2	2.9	2.3	2.1	2.1	1.7	2.4	1.5	2.6	1.3	2.1	5.5
Other Van	1.0	1.0	1.1	1.0	0.7	0.8	0.5	0.5	0.2	1.3	0.8	0.8	6.4
Pickup	18.0	13.4	12.5	12.6	9.9	10.9	10.8	8.6	10.0	10.0	15.6	12.2	7.3
Pickup W/Camper	0.6	0.8	1.1	1.1	1.0	0.7	0.9	0.7	1.1	0.5	0.8	0.9	6.2
Other Truck	0.0	0.7	0.7	0.8	1.0	0.8	0.6	0.5	0.8	1.3	2.8	1.2	11.6
Camper Coach	0.0	0.7	0.8	0.7	0.6	0.5	0.4	0.2	0.1	0.4	0.1	0.4	4.5
Taxi (personal use)	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.9
Other	0.8	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.4	0.2	9.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†	6.6
	By Vehicle Type												
Standard Auto	1.0	8.3	9.7	8.2	9.9	10.6	9.7	7.5	7.2	6.6	21.3	100.0	
Station Wagon	0.9	9.5	10.4	6.8	10.4	10.4	11.8	7.8	6.5	6.6	18.9	100.0	
Vanbus/Minibus	0.6	13.3	13.8	9.8	9.9	10.3	8.1	8.1	4.9	8.2	13.0	100.0	
Other Van	1.9	10.4	13.5	10.7	8.8	10.7	6.0	4.3	1.7	10.4	21.6	100.0	
Pickup	1.4	9.6	10.2	8.4	7.9	9.3	8.6	5.1	5.6	5.4	28.5	100.0	
Pickup W/Camper	.7	8.4	12.4	10.5	11.0	8.0	10.6	5.4	8.6	3.7	20.7	100.0	
Other Truck	0.0	5.0	5.3	5.3	7.7	6.5	4.9	3.1	4.6	7.0	50.6	100.0	
Camper Coach	0.0	15.0	17.7	13.9	14.5	11.7	10.0	3.5	2.3	5.7	5.7	100.0	
Taxi (personal use)	0.0	0.0	0.0	50.9	0.0	49.1	0.0	0.0	0.0	0.0	0.0	100.0	
Other	0.1	9.0	10.2	3.3	4.0	11.4	3.7	2.9	9.2	6.4	39.8	100.0	
All Vehicles	1.0	8.7	9.9	8.2	9.7	10.4	9.7	7.1	6.8	6.5	22.0	100.0	

† Total vehicles = 115,606,000 (120,098,000 less 4,492,000 for which model year data not reported)

* Includes all motor vehicles owned or available on regular basis, excluding motorcycles and mopeds due to lack of model year data

Table 16. Percent of Vehicles* Purchased New or Used by Model Year and Household Vehicle Ownership

Household Vehicle Ownership	Model Year of Vehicle											
	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968 and Earlier	All
One												
New	35.7	37.0	34.1	28.9	22.0	20.6	18.4	15.2	12.7	9.0	9.3	19.6
Used	0.0	2.0	7.4	12.2	16.8	19.0	22.3	23.6	25.6	29.7	30.3	20.0
Subtotal	35.7	39.0	41.5	41.1	38.8	39.6	40.7	38.8	38.3	38.7	39.6	39.6
Two												
New	41.2	40.5	33.7	27.2	22.7	21.7	16.6	15.3	14.3	11.4	6.9	19.5
Used	1.0	2.5	7.9	15.0	18.9	21.8	24.3	27.0	28.7	30.7	32.5	22.1
Subtotal	42.2	43.0	41.6	42.2	41.6	43.5	40.9	42.3	43.0	42.1	39.4	41.6
Three												
New	13.1	12.1	9.2	7.5	6.5	5.4	4.5	3.9	3.7	2.7	2.6	5.5
Used	0.2	0.9	2.3	4.9	7.1	6.5	8.2	9.7	8.9	10.4	11.8	7.6
Subtotal	13.3	13.0	11.5	12.4	13.6	11.9	12.7	13.6	12.6	13.1	14.4	13.1
Four or More												
New	8.8	4.5	4.2	2.1	2.7	2.1	2.2	1.6	1.5	1.2	0.9	2.2
Used	0.0	0.5	1.2	2.2	3.3	2.9	3.5	3.7	4.6	4.9	5.7	3.5
Subtotal	8.8	5.0	5.4	4.3	6.0	5.0	5.7	5.3	6.1	6.1	6.6	5.7
All Vehicles												
New	98.8	94.1	81.2	65.7	53.9	49.8	41.7	36.0	32.2	24.3	19.7	46.8
Used	1.2	5.9	18.8	34.3	46.1	50.2	58.3	64.0	67.8	75.7	80.3	53.2
Total Vehicles	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent Vehicles by Model Year	0.8	8.0	9.5	8.0	9.7	10.6	9.8	7.2	7.0	6.7	22.7	100.0

† Total Vehicles= 112,230,000 (120,098,000 less 7,868,000 not owned by households)

* Includes only motor vehicles which have been purchased by household members

Auto Characteristics Related to Method of Ownership

Table 17 illustrates relationships between the characteristics of household autos and the method by which they are owned or maintained by the household. Once again, the analysis of characteristics is limited to auto-type vehicles only (standard auto, station wagon and personal-use taxi) because of sample size restrictions. First, with regard to age, autos owned by the household are generally older (6.54 years) than company-owned (3.58 years) or leased (2.77 years) autos. Household-owned autos are also generally lighter in weight (3,628 pounds curb weight) than company-owned (3,858 pounds) and leased vehicles (3,786 pounds), have better fuel economy (19.3 MPG compared to 17.7 and 17.5 MPG, respectively), smaller engines (6.95 cylinders compared to 7.30 and 7.22), and are less likely to have air conditioning (56.1 percent vs. 80.3 percent and 81.4 percent) and automatic transmission (80.1 percent vs. 90.7 percent and 86.9 percent).

Among autos purchased by the household, those purchased new are more likely to be lighter in weight, have smaller engines, have higher MPG, and be equipped with air conditioning and automatic transmission, which generally reflects the incidence of these characteristics in new cars.

D. CHARACTERISTICS OF VEHICLES RELATED TO CHARACTERISTICS OF HOUSEHOLDS

The subject matter presented in this section combines relationships examined in Sections III-A, B, and C. Section III-A studied patterns in vehicle ownership (number of vehicles owned) related to characteristics of the household. Sections III-B and C focused on the characteristics of the vehicles themselves, including type, model year, and method of ownership relative to number of vehicles owned. This section relates the physical characteristics and ownership methods of private vehicles to the characteristics of households.

Vehicle Type by Household Residence SMSA Size

Table 18 illustrates patterns in types of vehicles owned relative to the population size of the SMSA in which the household resides. Major differences do not exist

Table 17. Characteristics of Autos* by Method of Ownership

Method of Ownership	Average Age (Years)	Average Curb Wt. (Pounds)	Average MPG	Average No. Cylinders	% With Air Cond.	% With Auto Transm.
Owned by Household Member	6.54	3628	19.3	6.95	56.1	80.1
Purchased New	4.67	3616	19.4	6.86	61.6	81.3
Purchased Used	8.23	3661	18.7	7.03	51.1	79.1
Company-Owned	3.58	3858	17.7	7.30	80.3	90.7
Leased	2.77	3786	17.5	7.22	81.4	86.9
Rental	4.10	3765	18.0	7.52	73.2	100.0
Other	7.27	3544	19.3	6.90	51.9	81.6
All	6.40	3640	19.0	6.97	56.9	80.5

* Includes only auto vehicles (standard auto, station wagon, personal use taxi) owned or available on regular basis

Table 18. Percent of Vehicles* by Type of Vehicle and SMSA Size With Single or Multi Vehicle Ownership**

Type of Vehicle	SMSA SIZE										
	Under 250,000		250,000 to 499,999		500,000 to 999,999		1 million to 3 million		Over 3 million		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Standard Auto	86.5	67.9	88.6	68.7	85.4	72.1	88.1	71.6	88.6	75.0	75.2
Station Wagon	7.4	9.1	7.0	8.6	7.5	8.5	6.9	9.6	7.5	10.1	8.8
Vanbus/Minibus	1.3	2.6	0.9	2.4	1.2	2.5	0.9	2.0	1.6	2.7	2.1
Other Van	0.4	0.6	0.0	0.8	0.5	0.5	0.3	1.1	0.5	0.9	0.7
Pickup	3.8	13.7	2.6	12.9	4.4	10.3	3.1	9.5	0.7	6.1	8.4
Pickup w/Camper	0.2	1.2	0.3	0.9	0.4	1.1	0.3	0.7	0.1	0.7	0.7
Other Truck	0.0	1.2	0.0	1.2	0.2	0.6	0.1	0.6	0.1	0.7	0.6
Camper Coach	0.2	0.5	0.0	0.6	0.1	0.4	0.2	0.6	0.0	0.5	0.4
Taxi (personal use)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Motorcycle	0.2	2.7	0.5	3.6	0.1	3.4	0.1	3.9	0.2	2.9	2.7
Moped	0.0	0.1	0.1	0.1	0.0	0.4	0.0	0.2	0.0	0.2	0.2
Other	0.0	0.4	0.0	0.2	0.2	0.2	0.0	0.2	0.4	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent by Size Group	2.7	10.5	3.5	13.0	3.8	12.3	7.5	25.2	5.7	15.8	100.0

† Total Vehicles = 77,609,000 (120,098,000 less 42,489,000 not located in SMSAs)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

between SMSA size groups in ownership by vehicle type. A slightly higher proportion of the vehicles owned by households in SMSA's of 1 million or more are autos (standard automobile and station wagon), in contrast with above average truck (pickup and other truck) ownership in SMSA's under 1 million. The largest differences occur between multivehicle households. For example, in multivehicle households in SMSA's under 250,000, 77.0 percent of all vehicles owned are autos (standard auto and station wagon) compared to 85.1 percent in SMSA's of 3 million or more. In comparison, single-vehicle households in the same SMSA groups differ only by the margin of 93.9 percent to 96.1 percent. Similarly, 13.7 percent of all vehicles in multivehicle households in SMSA's under 250,000 are pickup trucks, compared to 6.1 percent in SMSA's of 3 million and over. Significant differences do not exist in ownership of other vehicle types across SMSA size groups.

Vehicle Type with Location Inside or Outside SMSA's

The relationships between vehicle type and household location inside or outside SMSA's is similar in pattern to SMSA size group in that ownership of auto-type vehicles tends to increase and truck ownership decrease as the residential setting becomes more urban. Table 19 expands the SMSA size group analysis by including areas outside SMSA's. As before, SMSA residence locations are separated into central city and outside central city, while non-SMSA locations are separated into areas of population over or under 5,000.

Table 19 shows that the highest ownership rates of auto-type vehicles occurs within SMSA's. Of all vehicles, 75.1 percent in SMSA's are standard autos compared to 64.8 percent in non-SMSA's. Slight differences in vehicle type profile exist between the SMSA groups (central city vs. outside central city). For example, in SMSA noncentral city areas, 87.2 percent of all vehicles in single-vehicle households and 70.8 percent in multivehicle households are autos, compared to 88.1 percent and 72.1 percent, respectively in SMSA central city areas. Considerable differences exist between the non-SMSA groups, however. The proportion of vehicles that are autos in single-vehicle households in non-SMSA's over 5,000 is nearly like that in SMSA's (86.1 percent compared to 87.6 percent), while only 78.5 percent of vehicles are autos in single-vehicle households in non-SMSA's under 5,000. However, the proportion of vehicles which are autos is very comparable in multivehicle households in all non-SMSA areas (63.5 percent for the over 5,000

Table 19. Percent of Vehicles* by Vehicle Type and Location Inside or Outside SMSAs With Single or Multi Vehicle Ownership**

Type of Vehicle	Location Inside or Outside SMSAs										
	SMSA, Non-Central City		SMSA, Central City		Non-SMSA, Less Than 5,000		Non-SMSA, 5,000 or Greater		All Areas		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Standard Auto	87.2	70.8	88.1	72.1	78.5	58.1	88.1	63.5	85.9	67.3	71.4
Station Wagon	7.2	9.6	7.2	8.9	5.7	6.0	6.5	9.1	6.9	8.6	8.2
Vanbus/Minibus	1.7	2.3	0.8	2.5	0.7	2.1	0.6	2.2	1.0	2.3	2.0
Other Van	0.1	0.9	0.6	0.8	0.4	1.2	0.1	0.8	0.3	0.9	0.8
Pickup	3.0	10.5	2.6	9.5	14.1	23.0	6.3	16.7	5.1	13.8	12.0
Pickup w/Camper	0.3	0.9	0.2	0.8	0.6	1.0	0.1	1.4	0.3	1.0	0.8
Other Truck	0.1	0.9	0.0	0.7	0.0	4.4	0.1	1.6	0.1	1.7	1.3
Camper Coach	0.1	0.6	0.0	0.5	0.0	0.5	0.1	0.5	0.1	0.5	0.4
Taxi (personal use)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motorcycle	0.2	3.1	0.3	3.7	0.0	3.1	0.0	3.7	0.2	3.4	2.7
Moped	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.2
Other	0.1	0.2	0.1	0.3	0.0	0.4	0.1	0.3	0.1	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent Vehicles by Size Group	6.8	28.8	8.3	20.6	3.4	15.4	3.4	13.3	21.8	78.2	100.0

† Total Vehicles = 120,098,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

group compared to 58.1 percent for under 5,000), both of which are much less than SMSA multivehicle households (71.3 percent). The balance in the vehicle type distribution in all cases occurs through pickups and other truck since there are not major differences in the proportion of other vehicle types by location group.

Vehicle Type with Household Income

Differences in the types of vehicles owned related to level of household income are shown in Table 20. One relationship shown by the data is that the proportion of vehicles owned which are standard autos is fairly uniform for all single-vehicle households across income groups, and for all multivehicle households across income groups. In single-vehicle households standard autos range from 82.0 percent to 87.4 percent of all vehicles, except for households with incomes of $50,000 or more where virtually 100 percent of all vehicles owned are standard autos. Similarly, the proportion that are standard autos in multivehicle households ranges from 64.2 percent to 73.5 percent. In no case are differences in the proportion of standard autos systematically related to level of income.

Higher income levels generally result in larger proportions of the following vehicle types being owned: station wagons, vanbus/minibus, camper coach, and moped. Pickups, with and without camper, are more common among the lower to middle income strata (under $5,000 to $25,000). All other vehicles are either uniform in share across income levels or do not vary systematically by income.

Vehicle Type with Household Structure

Differences in household structure may be used to explain differences in the types of vehicles owned. As shown in Table 21, the largest proportions of standard auto vehicles occur in single-vehicle households without children, however, childless households own the fewest standard autos of all households when they are multivehicle households. Among households with children, those with a single adult own a higher proportion of standard auto vehicles than those with two or more adults, and the proportion of autos generally increases with the age of the youngest child for all households with children. Households with children are much more likely to own multipassenger vehicles such as station wagons and

Table 20. Percent of Vehicles* by Type of Vehicle and Annual Household Income with Single or Multi Vehicle Ownership**

Type of Vehicle	Annual Household Income																
	Less than $5,000		$5,000 to 9,999		$10,000 to 14,999		$15,000 to 24,999		$25,000 to 34,999		$35,000 to 49,999		$50,000 or More		All Income Groups		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Standard Auto	86.0	66.1	87.1	64.2	84.9	65.8	85.3	67.9	82.0	68.6	87.4	73.5	100.0	71.6	85.9	67.3	71.4
Station Wagon	5.2	5.9	5.9	6.5	7.6	8.3	8.7	8.8	11.9	11.1	11.0	9.2	0.0	10.2	6.9	8.6	8.2
Vanbus/Minibus	0.1	1.9	1.1	1.7	1.3	2.5	1.2	2.6	2.8	2.3	1.6	1.9	0.0	1.5	1.0	2.3	2.0
Other Van	0.2	0.9	0.2	0.8	0.6	1.1	0.4	0.7	0.7	1.3	0.0	0.6	0.0	1.1	0.3	0.9	0.8
Pickup	8.0	19.4	4.6	18.9	4.7	15.4	4.0	12.9	1.6	10.1	0.0	7.2	0.0	8.7	5.1	13.8	12.0
Pickup w/Camper	0.2	0.8	0.4	1.4	0.4	0.9	0.1	1.2	0.2	0.6	0.0	0.6	0.0	0.6	0.3	1.0	0.8
Other Truck	0.0	3.0	0.1	2.0	0.1	1.6	0.0	1.5	0.6	1.6	0.0	0.8	0.0	2.1	0.1	1.7	1.3
Camper Coach	0.0	0.2	0.1	0.4	0.1	0.4	0.1	0.5	0.0	0.7	0.0	0.8	0.0	1.0	0.1	0.5	0.4
Taxi (personal use)	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motorcycle	0.1	1.7	0.3	3.6	0.2	3.6	0.0	3.5	0.0	3.2	0.0	4.7	0.0	1.2	0.2	3.4	2.7
Moped	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.3	0.0	0.6	0.0	0.5	0.0	0.2	0.2
Other	0.2	0.1	0.1	0.4	0.0	0.2	0.2	0.3	0.2	0.2	0.0	0.1	0.0	1.5	0.1	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles by Income Group	4.9	4.1	6.8	10.7	5.4	17.0	3.7	28.4	0.7	11.1	0.3	4.5	0.0	2.4	21.8	78.2	100.0

† Total Vehicles= 120,098,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

Table 21. Percent of Vehicles* by Type of Vehicle and Household Structure With Single or Multi Vehicle Ownership**

Type of Vehicle	Household Structure											
	Single adult, no children		Two or more adult, no children		Single adult, youngest child under 6		Two or more adult, youngest child under 6		Single adult, youngest child 6 to 15		Two or more adult, youngest child 6 to 15	
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi
Standard Auto	90.9	59.7	85.6	70.5	85.1	72.4	75.3	62.8	87.4	69.8	76.0	64.2
Station Wagon	3.9	6.0	5.5	5.5	8.0	4.6	13.5	11.8	9.4	6.0	14.3	11.1
Vanbus/Minibus	0.4	1.8	1.1	2.2	1.7	4.6	2.9	3.2	1.0	0.9	1.3	2.4
Other Van	0.3	1.2	0.2	0.9	0.0	0.0	1.1	1.0	0.0	0.4	0.7	1.0
Pickup	3.6	17.2	6.6	13.7	4.4	10.2	6.2	14.6	1.4	12.5	6.9	13.7
Pickup w/Camper	0.0	0.4	0.6	1.0	0.0	3.2	0.5	0.9	0.3	0.6	0.6	1.3
Other Truck	0.0	2.6	0.2	1.9	0.0	0.0	0.3	1.2	0.0	1.8	0.0	2.1
Camper Coach	0.2	0.2	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.8	0.0	0.5
Taxi	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Motorcycle	0.3	10.2	0.2	3.4	0.8	5.0	0.0	3.8	0.0	4.2	0.2	3.2
Moped	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.1	0.0	2.1	0.0	0.3
Other	0.3	0.2	0.0	0.3	0.0	0.0	0.0	0.3	0.5	0.9	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles by Household Type	6.0	2.2	4.2	20.6	0.6	0.2	3.0	14.7	1.2	1.3	2.0	23.7

† Total Vehicles= 120,098,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

Table 21. Percent of Vehicles* by Type of Vehicle and Household Structure With Single or Multi Vehicle Ownership**—(Continued)

Type of Vehicle	Household Structure										
	Single adult, youngest child 16 or older		Two or more adult, youngest child 16 or older		Single adult, retired, no children		Two or more adult, retired, no children		All Households		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Standard Auto	89.1	82.3	88.1	74.6	92.9	55.0	90.0	66.0	85.9	67.3	71.4
Station Wagon	3.3	5.1	5.3	6.1	2.6	6.0	4.1	8.3	6.9	8.6	8.2
Vanbus/Minibus	0.0	0.3	0.0	1.8	0.4	2.0	0.3	1.5	1.0	2.3	2.0
Other Van	0.0	0.1	0.0	0.9	0.0	0.0	0.0	0.6	0.3	0.9	0.8
Pickup	7.0	7.4	5.3	11.5	3.9	30.2	5.6	18.0	5.1	13.8	12.0
Pickup w/Camper	0.6	0.2	1.3	0.7	0.0	2.9	0.0	1.0	0.3	1.0	0.8
Other Truck	0.0	0.9	0.9	0.9	0.0	3.9	0.0	1.3	0.1	1.7	1.3
Camper Coach	0.0	1.1	0.8	0.5	0.2	0.0	0.0	2.0	0.1	0.5	0.4
Taxi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motorcycle	0.0	2.6	0.0	2.5	0.0	0.0	0.0	0.8	0.2	3.4	2.7
Moped	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Other	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.5	0.1	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles by Household Type	0.5	1.4	0.5	10.5	1.1	0.2	2.7	3.4	21.9	78.1	100.0

† Total Vehicles= 120,098,000

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

vanbus/minibus, and proportions of such vehicles are higher in households with two or more adults compared to single adult. There are no significant tendencies in ownership of other vehicle types related to household structure.

Method of Vehicle Ownership with SMSA Size

As described earlier in the report, household vehicles may be available through several methods of ownership. Vehicles may either have been purchased by a member of the household, in which case they are said to be "owned" by the household, or they are "available through other means" on a regular basis. Purchased or "owned" vehicles are distinguished by whether they were purchased new or used. Vehicles "available through other means" may be leased, rented, company-owned or available on a regular basis such as borrowed.

Table 22 relates method of ownership with SMSA size. The table first shows that there are not substantial differences across SMSA groups in the percent of vehicles which are owned through purchase. Of all SMSA household vehicles, 93.5 percent are purchased by household members, with a somewhat higher percentage of vehicles in single-vehicle households being owned (96.2 percent) than in multivehicle households (92.6 percent). The range in percent of vehicles owned across SMSA groups is not appreciable for either single-vehicle (95.5 percent to 97.5 percent) or multivehicle households (91.9 percent to 93.3 percent).

The ratio of vehicles purchased new increases directly with SMSA size. Of vehicles purchased by single-vehicle households in SMSA's under 250,000, 46.7 percent* were purchased new, compared to 48.9 percent in SMSA's of 500,000 to 1 million and 59.5 percent in SMSA's of 3 million or more. Similarly, in multivehicle households, 40.1 percent* of vehicles purchased by households in SMSA's under 250,000 were purchased new, compared to 46.6 percent in SMSA's of 500,000 to 1 million and 51.0 percent in SMSA's of 3 million or more.

*This represents the percent of vehicles purchased new when only purchased vehicles are considered, obtained by dividing vehicles purchased new by total vehicles purchased.

Table 22. Percent of Vehicles* by Method of Ownership and SMSA Population Size Group With Single or Multi-Vehicle Ownership**

Method of Ownership	SMSA Size Group With Single or Multi Vehicle Ownership												
	Under 250,000		250,000 to 499,999		500,000 to 999,999		1 million to 3 million		Over 3 million		All SMSAs		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Owned by Household													
Purchased New	45.1	37.4	46.7	40.9	47.7	43.2	52.6	44.8	57.2	47.4	51.2	43.5	45.3
Purchased Used	51.4	55.9	46.8	51.4	49.8	49.5	43.2	47.1	38.9	45.7	45.0	49.1	48.2
Subtotal	96.5	93.3	95.5	92.3	97.5	92.7	95.8	91.9	96.1	93.1	96.2	92.6	93.5
Company Owned	1.3	3.4	2.4	5.1	0.8	4.7	1.3	4.3	1.6	3.9	1.4	4.3	3.6
Leased	0.6	0.5	0.2	0.9	0.1	1.1	0.4	1.0	0.4	1.0	0.3	0.9	0.7
Rental	0.0	0.1	0.2	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.1
Other	1.6	2.7	1.7	1.5	1.6	1.3	2.5	2.7	1.8	2.0	2.0	2.1	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of All Vehicles	2.8	10.5	3.5	13.0	3.8	12.3	7.5	25.1	5.7	15.8	23.3	76.7	100.0

† Total Vehicles = 77,401,000 (120,098,000 less 42,697,000 vehicles owned by households not residing in SMSA's or where method of ownership not reported)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

There are no significant trends in the rates of vehicle ownership by means other than purchase (company ownership, leasing or rental) across SMSA groups.

Method of Ownership with Income

Method of vehicle ownership varies in several ways with level of household income. As shown in Table 23, the percent of vehicles owned by household members for single-vehicle households is fairly uniform across income groups. The percent of vehicles that are owned is generally between 95 percent to 97 percent for the single-vehicle group, although the rate drops off slightly to 93.9 percent for incomes over $50,000. However, differences in percent of vehicles owned do occur among multivehicle households. The highest rates of household ownership, 93.6 percent to 94.6 percent, occur in households within an income range of $5,000 to $25,000. The ownership rate drops to 89.0 percent for upper-middle income households ($35,000 to $50,000) and to 85.2 percent for high income households (over $50,000). The reduced rates of household vehicle ownership in upper-income multivehicle households is accounted for by above average incidence of company-owned and leased vehicles. The proportion of vehicles owned by the household that are purchased new increases rather uniformly with income, for both single and multivehicle households. Only 32.3 percent* of all vehicles owned in multivehicle households with incomes under $5,000 are purchased new, compared to 39.7 percent in households with incomes between $10,000 and $15,000, to 56.2 percent for incomes between $25,000 and $35,000, and 71.1 percent for incomes of $50,000 or more.

Method of Ownership by Household Structure

As seen in Table 24, method of vehicle ownership varies according to the structure of the household. The proportion of vehicles that are owned by household members ranges from a high of about 100 percent for single-adult multivehicle households with the youngest child under 6 years old to a low of 85.5 percent for single-adult multivehicle households with no children. Households with retired head

*This represents the percent of vehicles purchased new when only purchased vehicles are considered, obtained by dividing vehicles purchased new by total vehicles purchased.

Table 23. Percent of Vehicles* by Method of Ownership and Annual Household Income With Single or Multi Vehicle Ownership**

Method of Ownership	Annual Household Income																
	Less than $5,000		$5,000 to 9,999		$10,000 to 14,999		$15,000 to 24,999		$25,000 to 34,999		$35,000 to 49,999		$50,000 or More		All Income Groups		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Owned by Household Member																	
Purchased New	37.0	29.6	43.5	33.9	55.0	37.3	60.7	43.3	71.9	51.1	65.1	52.6	76.2	60.6	49.2	42.1	43.7
Purchased Used	58.8	62.1	53.6	60.7	42.2	56.6	34.8	50.3	23.3	39.8	31.0	36.4	17.7	24.6	47.3	50.7	50.0
Subtotal	95.8	91.7	97.1	94.6	97.2	93.9	95.5	93.6	95.2	90.9	96.1	89.0	93.9	85.2	96.5	92.8	93.7
Company-Owned	0.3	2.6	0.7	2.3	1.6	3.2	3.0	3.9	2.5	6.3	3.9	6.6	6.1	11.6	1.4	4.2	3.6
Leased	0.3	0.2	0.1	0.1	0.2	0.5	0.2	0.7	1.2	1.2	0.0	2.1	0.0	1.8	0.2	0.7	0.6
Rental	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.1	0.6	0.0	0.0	0.1	0.0	0.2	0.0	0.2	0.1
Other	3.6	5.3	2.0	2.8	1.0	2.4	1.3	1.7	0.5	1.6	0.0	2.2	0.0	1.2	1.9	2.1	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles	4.9	4.1	6.8	10.7	5.4	17.0	3.7	28.3	0.7	11.1	0.3	4.5	0.1	2.4	21.9	78.1	100.0

† Total Vehicles = 120,045,000 (120,098,000 less 53,000 where type ownership not reported)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

Table 24. Percent of Vehicles* by Method of Ownership and Household Structure With Single or Multi Vehicle Ownership**

Method of Ownership	Household Structure											
	Single adult, no children		Two or more adult, no children		Single adult, youngest child under 6		Two or more adult, youngest child under 6		Single adult, youngest child 6 to 15		Two or more adult, youngest child 6 to 15	
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi
Owned by Household Member												
Purchased New	54.7	35.0	51.7	46.9	33.7	32.4	33.7	38.2	40.1	29.4	38.7	39.0
Purchased Used	40.9	50.5	44.8	46.2	63.5	67.6	62.8	54.0	54.6	61.6	57.9	54.6
Subtotal	95.6	85.5	96.5	93.1	97.2	100.0	96.5	92.2	94.7	91.0	96.6	93.6
Company-Owned	1.9	5.7	1.4	4.4	0.0	0.0	1.8	5.3	1.3	3.5	1.3	4.3
Leased	0.3	0.4	0.1	0.8	0.0	0.0	0.1	0.5	0.3	0.4	0.5	0.8
Rental	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0
Other	2.2	8.4	1.9	1.7	2.8	0.0	1.6	1.8	3.7	5.1	1.4	1.3
Total Vehicles	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 †
Percent of Vehicles	6.1	2.2	4.2	20.6	0.6	0.2	3.0	14.7	1.2	1.3	2.0	23.6

† Total Vehicles = 120,045,000 (120,098,000 less 53,000 where type ownership not reported)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

Table 24. Percent of Vehicles* by Method of Ownership and Household Structure With Single or Multi Vehicle Ownership—(Continued)**

Method of Ownership	Household Structure										
	Single adult, youngest child 16 or older		Two or more adult, youngest child 16 or older		Single adult, retired, no children		Two or more adult, retired, no children		All Groups		All
	Single	Multi	Single	Multi	Single	Multi	Single	Multi	Single	Multi	
Owned by Household Member											
Purchased New	50.9	43.1	34.6	45.9	65.4	37.5	63.1	58.2	49.2	42.1	43.7
Purchased Used	45.6	53.4	62.3	48.0	34.2	58.6	36.0	40.0	47.3	50.7	50.0
Subtotal	96.5	96.5	96.9	93.9	99.6	96.1	99.1	98.2	96.5	92.8	93.7
Company-Owned	2.4	1.8	1.6	4.0	0.0	0.0	0.2	0.6	1.4	4.3	3.6
Leased	0.0	0.5	1.5	0.9	0.0	0.0	0.2	0.4	0.2	0.7	0.6
Rental	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Other	1.1	1.2	0.0	1.0	0.4	3.9	0.5	0.8	1.9	2.1	2.0
Total Vehicles	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles	0.5	1.4	0.5	10.5	1.1	0.2	2.7	3.4	21.9	78.1	100.0

† Total Vehicles = 120,045,000 (120,098,000 less 53,000 where type ownership not reported)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

with retired head (single or multiple adults) have the highest proportions of vehicles owned (averaging about 99 percent for all cases) of all household groups. The highest percentage of company-owned vehicles occurs in multivehicle households without children and two-or-more-adult households with a child under 6 years old. More than 50 percent of household-owned vehicles are purchased new in childless households where only one vehicle is owned; in childless households where there is more than one vehicle but also two or more adults; and in the case of single-adult, single-vehicle households where the youngest child is 16 or older. Used vehicles are more common in all other households. The percent of vehicles purchased new generally increases with the age of the youngest child, which probably indicates a more mature household and higher income.

Method of Ownership with Occupation of Household Head*

Table 25 illustrates relationships between method of vehicle ownership and occupation of the head of household. Households where the proportion of vehicles owned by household members is highest include households headed by retired individuals (98 percent) and those headed by service workers (96 percent). For most occupation groups approximately 95 percent of household vehicles have been purchased, with below average rates occurring in sales and clerical households (90.9 percent) and manager and administrator households (87.6 percent). Manager and administrator households also have the highest proportions of company-owned cars, 9.7 percent, compared to an overall average of 3.6 percent.

Considering only vehicles purchased by household members, professional/technical households (56.4 percent)** and households with retired head (59.7 percent) are most likely to have purchased their vehicles new. Households least likely to have purchased their vehicles new are those headed by craftsmen (39.8 percent),** operatives and lab workers (36.2 percent) service workers (38.0 percent).

*Occupational categories were obtained from the Dictionary of Occupational Titles (one-digit summary).

**This represents the percent of vehicles purchased new when only purchased vehicles are considered, obtained by dividing vehicles purchased new by total vehicles purchased.

Table 25. Percent of Vehicles* by Method of Ownership and Occupation of Household Head

Method of Ownership	Occupation of Household Head										
	Professional & Technical	Farmers & Farm Managers	Managers & Administrators	Sales & Clerical	Craftsmen	Operatives & Laborers	Service Workers	Retired	Unemployed	Occupation or Work Status Unknown	All
Owned by Household Member											
Purchased New	53.5	46.1	47.8	43.0	37.7	34.6	36.5	58.5	40.4	40.6	43.7
Purchased Used	41.3	49.2	39.8	47.9	57.0	60.9	59.6	39.5	55.2	49.2	50.0
Subtotal	94.8	95.3	87.6	90.9	94.7	95.5	96.1	98.0	95.6	89.8	93.7
Company-Owned	2.0	0.7	9.7	5.8	3.2	2.3	1.2	0.7	0.8	5.6	3.6
Leased	0.7	0.0	1.1	1.3	0.3	0.3	0.1	0.3	0.2	1.5	0.6
Rental	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
Other	2.4	4.0	1.4	2.0	1.7	1.9	2.6	1.0	3.3	3.1	2.0
Total Vehicles	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
Percent of Vehicles	10.1	2.6	12.7	11.0	16.3	26.1	5.4	9.1	0.3	6.4	100.0

† Total Vehicles = 120,045,000 (120,098,000 less 53,000 where type ownership not reported)

* Includes all motor vehicles (autos, trucks, motorcycles, mopeds) owned or available on regular basis

Characteristics of Autos by SMSA Size

The following series of tables illustrates select characteristics of household autos related to household characteristics. Auto characteristics include age, curb weight, MPG, number of cylinders, transmission type and air conditioning. Physical characteristics data is available for a sample of vehicles only, so for reasons of sample representativeness the analysis is restricted to auto vehicles.

Table 26 lists various physical characteristics of household autos (standard auto, station wagon and personal-use taxi) related to SMSA size and single or multivehicle ownership.

Average age of autos ranges from a high of 6.68 years in SMSA's under 250,000 to a low of 6.28 years in SMSA's of 1 to 3 million. The average age of autos tends to be younger in multivehicle households in SMSA's under 1 million and younger in single-vehicle households in SMSA's over 1 million. There are no major differences in vehicle weight across SMSA groups. Average auto weight is 3,640 pounds for all autos and ranges from a low of 3,590 pounds in SMSA's of 1 to 3 million to a high of 3,662 pounds in SMSA's of 250,000 to 500,000. Fuel economy (MPG), engine size (number of cylinders) and incidence of automatic transmission do not vary substantially across areas. Air conditioning is somewhat more common in SMSA's over 250,000 (56.6 percent or greater) than in SMSA's under 250,000 (51.7 percent).

Characteristics of Autos by Location Inside or Outside SMSA's

Table 27 shows variations in characteristics of household autos based on household location inside or outside SMSA's. Household location inside SMSA's is separated into central city and outside central city, while locations outside SMSA's are separated into areas that are over or under 5,000 population. Differences in auto characteristics are more apparent with the inside/outside SMSA residential index than with SMSA size group. The data show that autos owned by households inside SMSA's are generally newer (6.30 to 6.46 vs. 6.51 to 6.67 years), lighter in weight (3,592 to 3,653 vs. 3,670 to 3,725 pounds), have smaller engines (6.87 to 6.94 vs. 7.05 to 7.15 cylinders) and better fuel economy (19.0 to 19.1 vs. 18.3 to 18.7 MPG) than autos owned by households outside SMSA's. Inside SMSA's, autos

Table 26. Characteristics of Autos* by SMSA and Single or Multi Vehicle-Ownership**

SMSA Size Group	Average Age (Years)	Average Curb Wt. (Pounds)	Average MPG	Average No. of Cylinders	% with Air Cond.	% with Auto Trans.
Under 250,000	6.68	3621	19.2	6.95	51.7	79.1
Single	6.78	3600	19.3	7.00	51.9	84.0
Multi	6.65	3627	19.1	6.93	51.6	77.4
250,000—499,999	6.35	3662	19.1	6.93	57.2	78.8
Single	6.63	3658	17.8	7.11	56.2	84.8
Multi	6.26	3662	19.5	6.87	57.6	76.8
500,000—999,999	6.38	3645	18.7	6.94	56.6	81.0
Single	6.68	3680	18.9	7.11	53.4	88.0
Multi	6.27	3632	18.7	6.88	57.8	78.5
1 million to 3 million	6.28	3590	19.6	6.85	57.7	78.8
Single	6.13	3532	19.7	6.91	58.4	83.9
Multi	6.34	3611	19.5	6.82	57.4	77.1
Over 3 million	6.34	3609	19.0	6.90	57.7	82.0
Single	6.05	3607	19.2	6.96	58.3	86.8
Multi	6.46	3609	19.9	6.87	57.5	80.1
All	6.40	3640	19.0	6.97	56.9	80.5

* Includes only auto vehicles (standard auto, station wagon, personal use taxi) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

Table 27. Characteristics of Autos* by Location Inside and Outside SMSA's and Single or Multi Vehicle Ownership**

Location	Average Age (Years)	Average Curb Wt. (Pounds)	Average MPG	Average No. of Cylinders	% with Air Cond.	% with Auto Trans.
SMSA, Non-Central City	6.30	3592	19.1	6.87	55.3	79.7
Single	6.15	3557	19.5	6.94	55.8	85.3
Multi	6.34	3602	19.0	6.85	55.1	78.2
SMSA, Central City	6.46	3653	19.0	6.94	58.6	80.6
Single	6.52	3640	18.7	7.04	57.2	85.6
Multi	6.43	3658	19.1	6.89	59.3	78.3
Non-SMSA, Under 5,000	6.67	3725	18.3	7.15	56.9	83.1
Single	7.01	3580	19.2	7.17	54.4	85.7
Multi	6.57	3767	18.1	7.14	57.7	82.3
Non-SMSA, 5,000 & Over	6.51	3670	18.7	7.05	57.8	80.8
Single	6.50	3606	19.0	7.07	54.9	84.9
Multi	6.52	3690	18.6	7.04	58.7	79.4
All	6.40	3640	19.0	6.97	56.9	80.5

* Includes only auto vehicles (standard auto, station wagon, personal use taxi) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

owned by households living outside central cities tend to be newer (6.30 vs. 6.46 years), lighter in weight (3,592 vs. 3,653 pounds), have smaller engines (6.87 vs. 6.94 cylinders) but about the same fuel economy (19.1 vs. 19.0 MPG) as those inside central cities. Outside SMSA's, autos owned by households residing in places of 5,000 or more tend to be newer (6.51 vs. 6.67 years), lighter (3,670 vs. 3,725 pounds), have smaller engines (7.05 vs. 7.15 cylinders), and better fuel economy (18.7 vs. 18.3 MPG) than places under 5,000.

Characteristics of Autos by Household Income

Table 28 illustrates differences in household vehicle characteristics related to annual household income. The table shows that the average age of autos generally declines with higher incomes, ranging from 8.38 years for households in the lowest income bracket (under $5,000) to 4.56 years for households in the highest income category ($50,000 or more). Vehicles owned by higher income households also tend to be heavier (3,835 pounds for highest income vs. 3,469 pounds for lowest income) and to have poorer fuel economy (16.8 MPG for highest vs. 19.7 MPG for lowest). Incidence of air conditioning also increases with income, from 49.5 percent in the low income group to 75.2 percent in the highest income group. Systematic differences by income are not apparent in engine size (number of cylinders) or transmission type.

Table 28. Characteristics of Autos* By Annual Household Income and Single or Multi Vehicle Ownership**

Annual Household Income	Average Age (Years)	Average Curb Wt. (Pounds)	Average MPG	Average No. of Cylinders	% with Air Cond.	% with Auto. Trans.
Under $5,000	8.38	3469	19.7	7.06	49.5	83.5
Single	8.54	3516	20.0	7.07	47.3	84.9
Multi	8.14	3646	19.3	7.04	52.7	81.4
$5,000 to 9,999	7.23	3572	19.1	7.00	52.6	82.3
Single	6.83	3571	19.1	7.02	54.0	85.4
Multi	7.56	3574	19.1	6.99	51.4	79.7
$10,000 to 14,999	6.54	3630	18.9	6.97	54.9	80.6
Single	5.58	3606	19.1	6.97	57.8	85.0
Multi	6.92	3640	18.8	6.98	63.8	78.9
$15,000 to 24,999	6.04	3639	19.0	6.95	58.1	79.8
Single	4.98	3677	18.9	7.08	64.7	86.3
Multi	6.20	3633	19.0	6.92	57.0	78.8
$25,000 to 34,999	5.56	3728	19.1	6.87	62.7	79.1
Single	4.73	3660	19.0	7.03	56.2	87.2
Multi	5.63	3734	19.1	6.86	62.4	78.4
$35,000 to 50,000	5.32	3796	18.4	6.87	65.3	78.1
Single	4.82	3972	16.1	7.25	58.0	85.3
Multi	5.35	3783	18.5	6.85	65.1	77.6
Over $50,000	4.56	3835	16.8	7.15	75.2	84.4
Single	4.18	3680	17.8	7.21	78.6	83.5
Multi	4.58	3842	16.7	7.15	75.0	84.4
All	6.40	3640	19.0	6.97	56.9	80.5

* Includes only auto vehicles (standard auto, station wagon, personal use taxi) owned or available on regular basis

** Indicates number of vehicles owned by or available to the respective household

IV. TRENDS OVER TIME IN VEHICLE OWNERSHIP

This section compares changes in patterns of household vehicle ownership that have occurred since the 1969 NPTS. Examination of trends is limited to measures where comparability exists between the 1969 and 1977 surveys. Changing levels of vehicle ownership are evaluated relative to household location in terms of SMSA size, annual household income (in 1977 dollars), number of household adults, and number of household drivers. Changes in characteristics of private vehicles are also examined, focusing on age of vehicle and whether purchased new or used.

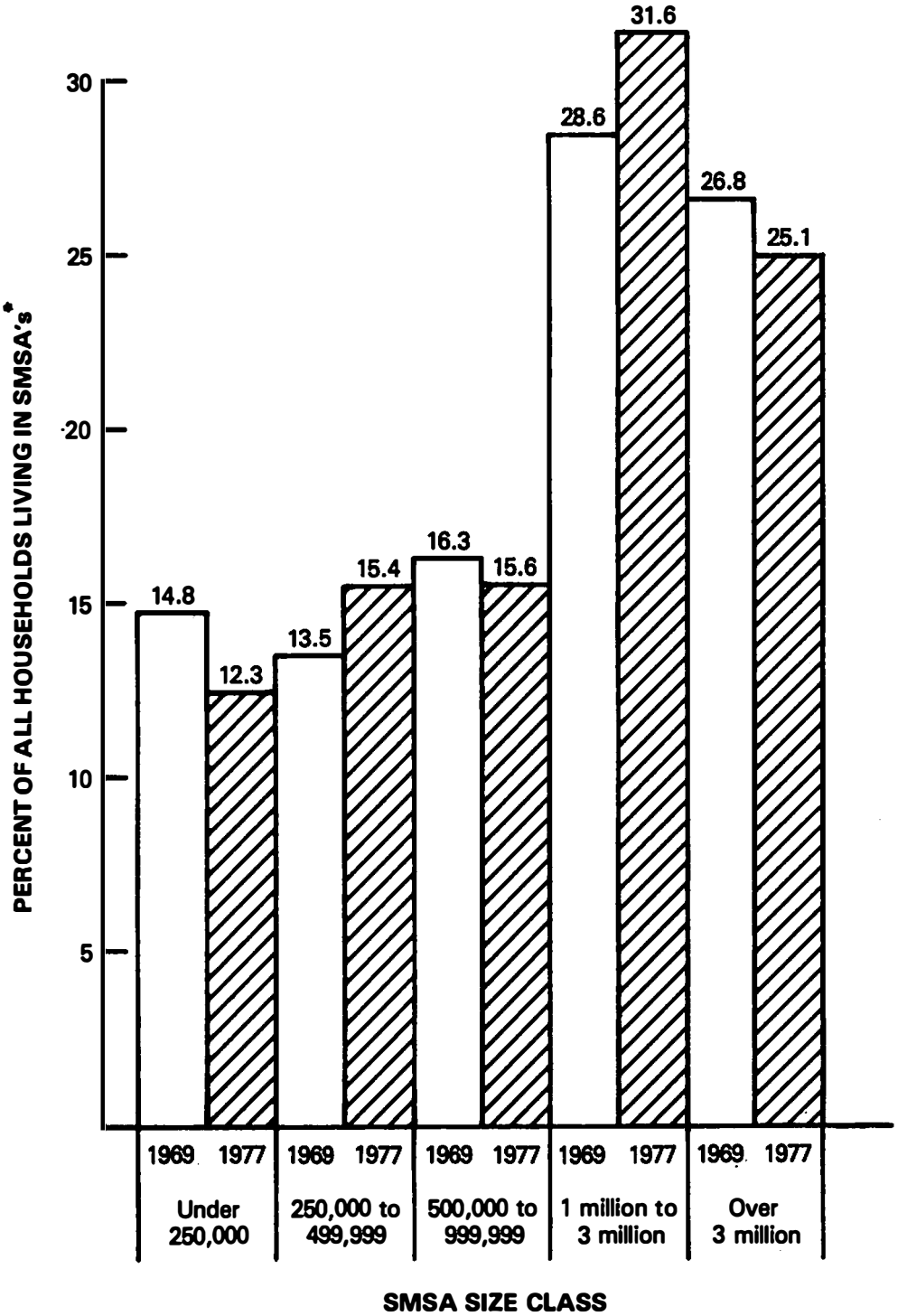
For comparability reasons, data in this section abstracted from the 1977 NPTS is restricted to only that subset of household vehicles described in the 1969 NPTS as "autos." This group includes autos (standard auto and station wagon), personal-use taxis, and vanbus/minibus vehicles. Household "autos" are all of the above that are owned by or available to the household on a regular basis.

A. TRENDS IN AUTO OWNERSHIP BY SMSA SIZE

Figures 8 and 9 compare data on household residence and auto ownership in SMSA's in 1969 and 1977. The number of households located in SMSA's was growing over this interval from 41.5 million in 1969 to 50.8 million in 1977. As seen in Figure 8, patterns of increase have been uneven. SMSA's in the 250,000 to 500,000 range and the 1 to 3 million range were the only size groups to gain households, while all other size groups (including the very smallest and very largest) lost in the relative proportion of households.

During this period, auto ownership increased in all but the smallest SMSA group (under 250,000). The percent of households owning at least one auto grew from 78.9 percent to 81.9 percent for all SMSA's, or a 3.8 percent increase. The more important trend in this increase, however, was the growth in households with two or more autos. While only 31.5 percent of SMSA households owned two or more autos in 1969, 38.0 percent were multiple-auto households in 1977, for an increase of 20.6 percent in this ownership category. All SMSA groups showed an increase in multiple-auto ownership from 1969 to 1977, including the under 250,000 group. The lost ground in the under 250,000 group is attributable to a decline in the proportion of households owning one auto.

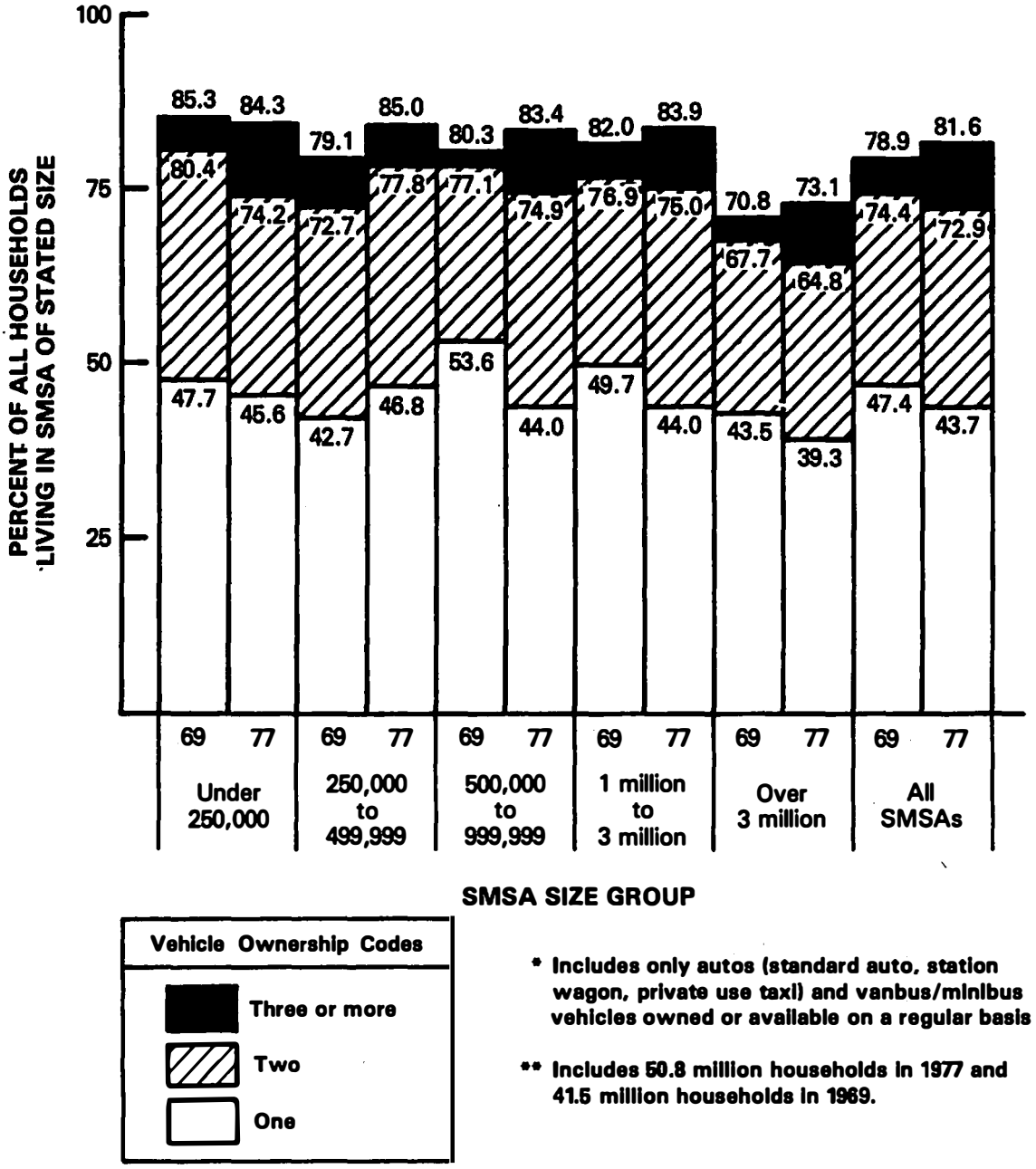
FIGURE 8
DISTRIBUTION OF POPULATION BY SMSA SIZE CLASS IN 1969 AND 1977



*** Includes 50.8 million households in 1977 and 41.5 million households in 1969**

Source: Based on data from 1969 and 1977 NPTS Surveys

FIGURE 9
PERCENT OF HOUSEHOLDS OWNING
ONE OR MORE AUTOS* BY SMSA SIZE IN 1969 AND 1977**



* Includes only autos (standard auto, station wagon, private use taxi) and vanbus/minibus vehicles owned or available on a regular basis

** Includes 50.8 million households in 1977 and 41.5 million households in 1969.

Source: Based on Table 2 from 1969 NPTS Report: *Vehicle Ownership* (p.15) and 1977 Table A-1 in Appendix

Table 29 indicates that aggregate auto ownership for all SMSA's has increased from 1.2 to 1.3 over the 1969 to 1977 period. The biggest changes in aggregate auto ownership occurred in the smallest (under 250,000) and the largest (over 3 million) SMSA groups. Average autos per household increased from 1.3 to 1.4 in the under 250,000 group and from 1.0 to 1.2 in the over 3 million class. More detailed data on trends in ownership by SMSA size may be seen in Table A-1 in Appendix A.

B. TRENDS IN AUTO OWNERSHIP WITH ANNUAL HOUSEHOLD INCOME

Comparing differences in auto ownership between 1969 and 1977 attributable to changes in household income is made difficult because of the impact of inflation on incomes during this period. In order to approximate differences in real income between the two periods, a consumer price index* was used to inflate 1969 incomes to 1977 price levels.

Figure 10 compares the distributions of 1969 and 1977 households by income level after adjustment. The figure shows a general upward shift in the distribution of households by income class. In particular, the 1977 population shows a reduction in the percent of households in each income group under $15,000 except the lowest category, under $5,000. In 1969, 72 percent of all households had incomes (in 1977 dollars) under $15,000. By 1977, only 62.8 percent of households had incomes under $15,000. This implies an increase from 28 percent to 37.2 percent in the proportion of households with incomes of $15,000 or more.

Figure 11 illustrates changes in household auto ownership by income group between 1969 and 1977. The results are somewhat surprising. Overall, the percent of households with at least one auto increased from 79.4 percent to 82.1 percent. However, only households in the under $5,000 and the $5,000 to $10,000 classes showed ownership increases by this measure, while households with incomes over $10,000 showed slight declines. More revealing, however, is the fact that multiple-auto ownership (two or more autos) has increased in all income groups

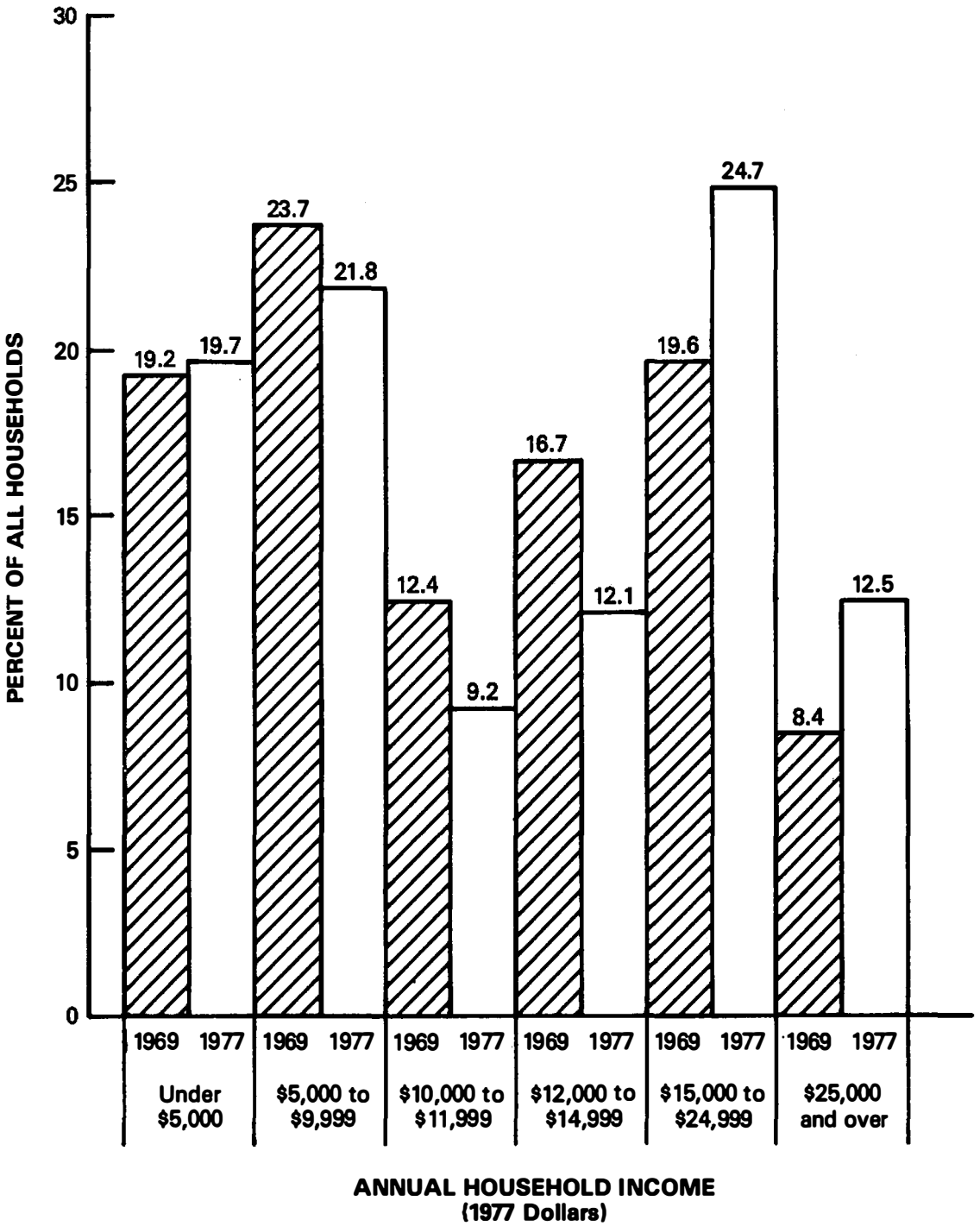
*CPI-W 1969 = 109.8; CPI-W 1977 = 181.5. Bureau of Labor Statistics, Consumer Price Index (CPI) covers urban wage earners and clerical workers (CPI-W); U.S. city average.

Table 29
Average Number of Autos Per Household by SMSA Size Group in 1969 and 1977

SMSA Size Group	1969 Averege Autos Per Household†	1977 Average Autos Per Household‡
Less than 250,000	1.3	1.4
250,000 to 999,999	1.3	1.3
1 million to 3 million	1.3	1.3
Over 3 million	1.0	1.2
All SMSAs	1.2	1.3

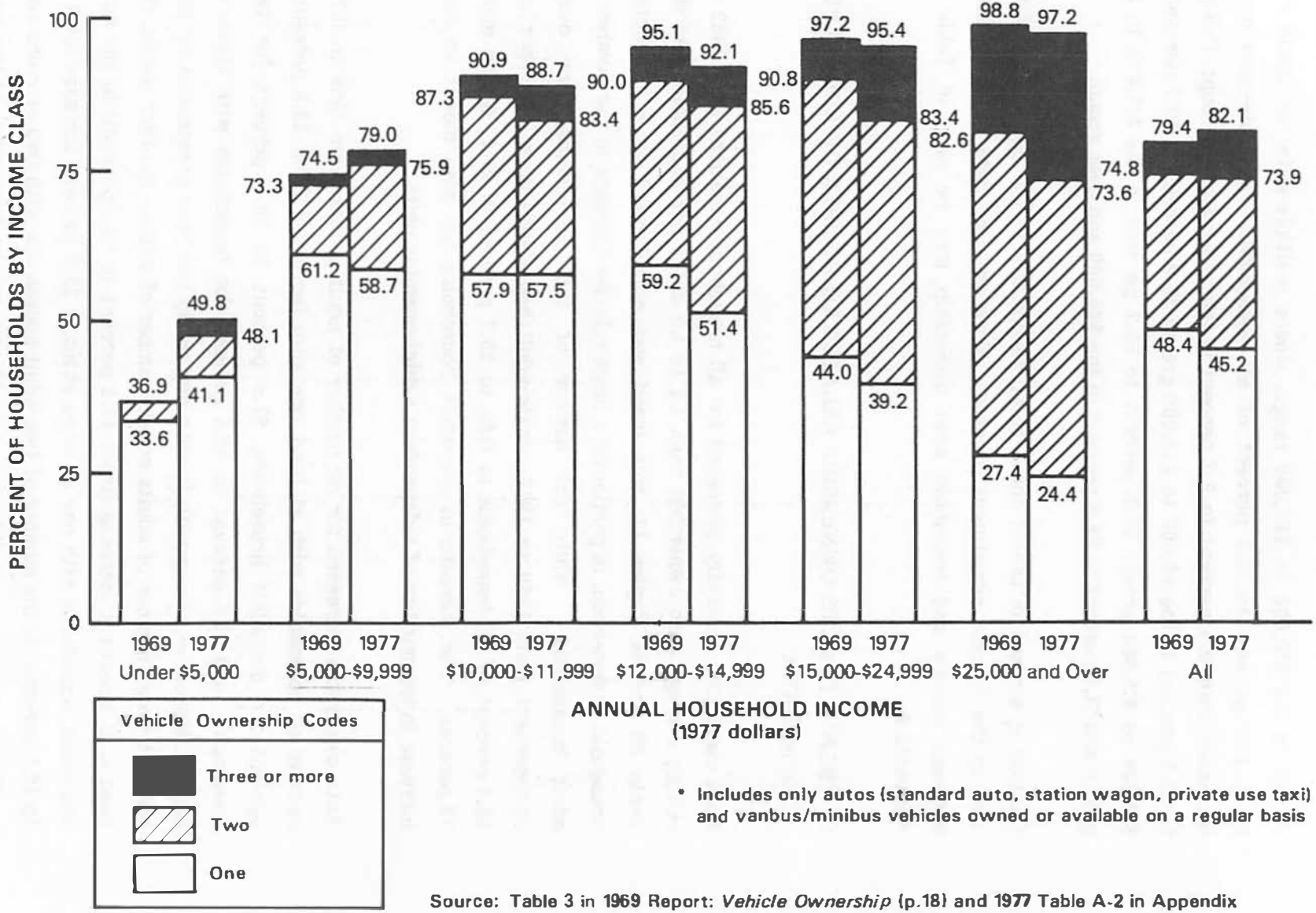
† Source: Table 14 from 1969 NPTS Report: *Vehicle Ownership* (p.34)
‡ Source: 1977 Table A-1 in Appendix

FIGURE 10
DISTRIBUTION OF HOUSEHOLDS BY ANNUAL INCOME IN 1969 AND 1977 (IN 1977 DOLLARS)



Source: Table 3 in 1969 Report: *Vehicle Ownership* (p.18) and 1977 Table A-2 in Appendix

FIGURE 11
PERCENT OF HOUSEHOLDS OWNING ONE OR MORE AUTOS* BY ANNUAL HOUSEHOLD INCOME IN 1969 AND 1977



* Includes only autos (standard auto, station wagon, private use taxi) and vanbus/minibus vehicles owned or available on a regular basis

Source: Table 3 in 1969 Report: *Vehicle Ownership* (p.18) and 1977 Table A-2 in Appendix

except in the $10,000 to $12,000 range, where multiple-auto ownership declined from 33.0 percent to 31.2 percent of all households. Multiple-auto ownership increased from 3.3 percent to 8.7 percent in the under $5,000 group; 13.3 percent to 20.3 percent in the $5,000 to $10,000 group; 35.9 percent to 40.7 percent in the $12,000 to $15,000 group; 53.2 percent to 56.2 percent in the $15,000 to $25,000 group; and 71.4 percent to 72.8 percent in the $25,000 and over group.

Caution is advised in use of these relationships due to the coarseness of the CPI used in the income adjustment process. More detailed data on the relationship between income and household auto ownership may be seen in Table A-2 in Appendix A.

C. TRENDS IN AUTO OWNERSHIP RELATED TO NUMBER OF ADULTS PER HOUSEHOLD

Auto ownership generally increased for all household situations from 1969 to 1977, raising average auto ownership from 1.2 to 1.3 autos per household. As shown in Table 30 and in Figure 12, this trend was complicated by a restructuring in household composition, in particular a large relative increase in the number of one-adult households. While the number of U.S. households grew overall by 20.6 percent from 1969 to 1977, single-adult households grew in proportion from 20.9 percent of all households in 1969 to 25.7 percent in 1977, for an increase of 23 percent. The increase in one-adult households has also meant an important increase in the number of independent vehicle-owning units.

Auto ownership increased for all number of adult groups from 1969 to 1977. The number of households with at least one auto increased from 43.8 percent to 58.1 percent for one-adult households, 87.6 percent to 89.6 percent for two-adult households, and 91.8 percent to 92.5 percent for households with three or more adults. Moreover, the growth in auto ownership has been greatest at or above the level at which number of adults equals number of autos. In other words, there has been a 32.6 percent increase (from 43.8 percent to 58.1 percent) in the number of one-adult households with one or more autos, a 35.0 percent increase (30.3 percent to 40.9 percent) in the number of two-adult households with two or more autos, and an 87.9 percent increase (17 percent to 32 percent) in the number of three-or-more adult households with three or more autos.

Table 30. Percent of Households by Auto Ownership* and Number of Adults** in 1969 and 1977

Household Auto Ownership		Number of Adults Per Household			
		One	Two	Three or More	All
		Within Adult Group			
1969	None	56.2	12.4	8.2	20.6
1977		41.9	10.4	7.5	17.9
1969	One	42.3	57.3	32.2	48.4
1977		54.0	48.7	23.9	45.2
1969	Two	1.5	29.1	42.6	26.4
1977		3.5	37.1	36.7	28.7
1969	Three or More	0.0	1.2	17.0	4.6
1977		0.6	3.8	31.9	8.2
1969	Total	100.0	100.0	100.0	100.0†
1977		100.0	100.0	100.0	100.0‡
		By Ownership Group			
1969	None	57.2	33.6	9.2	100.0
1977		60.0	31.0	9.0	100.0
1969	One	18.3	66.3	15.4	100.0
1977		30.7	57.6	11.7	100.0
1969	Two	1.2	61.4	37.4	100.0
1977		3.2	69.0	27.8	100.0
1969	Three or More	0.0	14.9	85.1	100.0
1977		1.7	20.2	78.1	100.0
1969	All	20.9	55.9	23.2	100.0†
1977		25.7	53.4	20.9	100.0‡

† Total Households = 62,500,000 (1969)

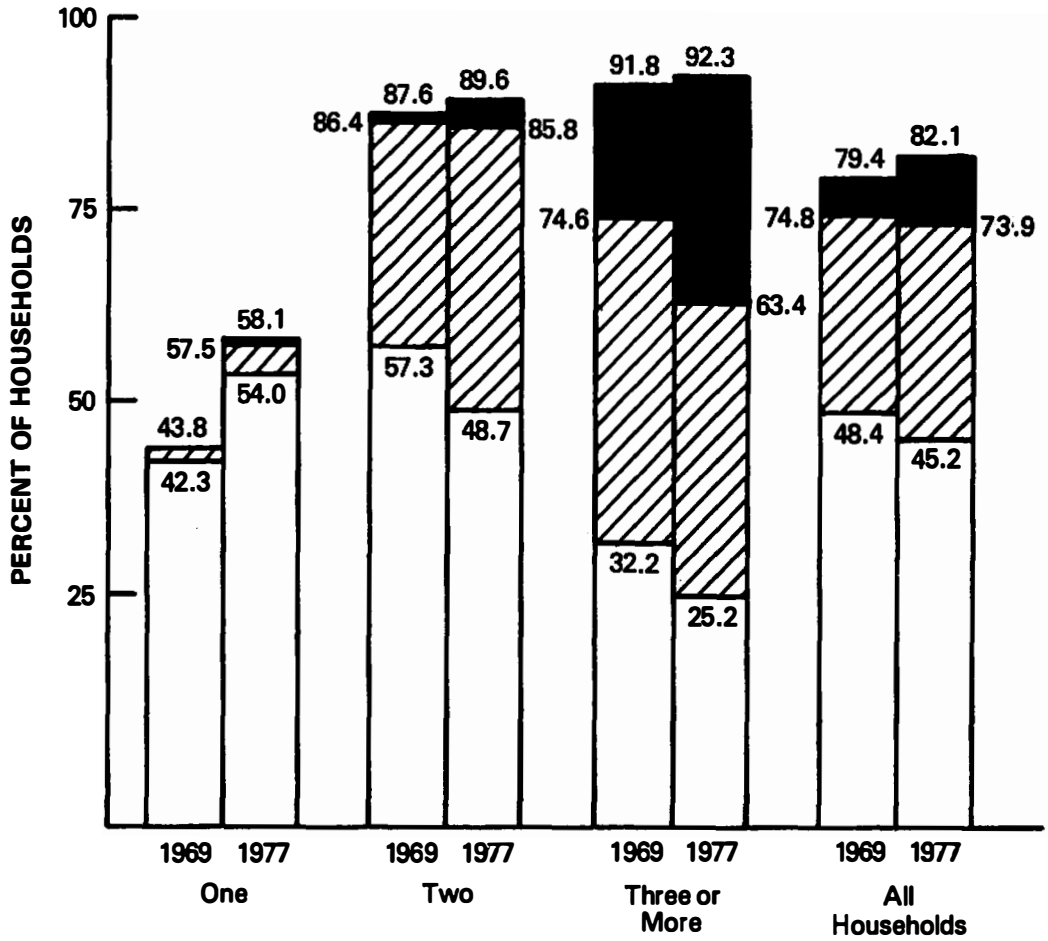
‡ Total Households = 75,412,000 (1977)

Source: Based on data from Table A-3 in Appendix (1977) and Table 4 from 1969 NPTS Report II: *Auto Ownership* (p. 19)

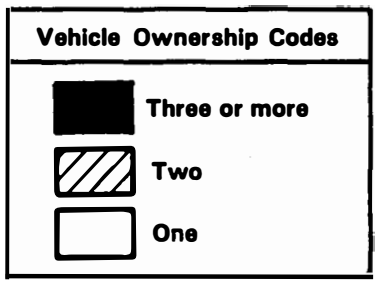
* Includes only autos (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on regular basis

** Includes all persons 16 years or older

FIGURE 12
PERCENT OF HOUSEHOLDS OWNING ONE OR MORE AUTOS*
BY NUMBER OF ADULTS PER HOUSEHOLD IN 1969 AND 1977



NUMBER OF ADULTS
(Persons 16 Years of Age and Older)



* Includes standard auto, station wagon, personal use taxi, and vanbus/minibus

Source: Based on Table 4 from 1969 NPTS Report: *Vehicle Ownership* (p. 19), and 1977 Table A-3 in Appendix

More detailed data on auto ownership as related to number of adults per household in 1977 may be found in Table A-3 in Appendix A.

D. TRENDS IN AUTO OWNERSHIP RELATED TO NUMBER OF HOUSEHOLD DRIVERS

Although the incidence of auto ownership has remained fairly constant, the mix of drivers and number of autos per household has changed since 1969. As seen in Figure 13, except for the appearance of autos in 8.3 percent of the zero-driver households, there were no large fluctuations in the incidence of auto ownership. For households with one or more drivers, the proportion with at least one auto did not change by more than 2 percent from 1969 to 1977. However, the major trend again was away from one-auto households and toward a larger share of two-or-more-auto households. Multiple-auto households increased from 5.2 percent to 14.3 percent in one-driver households, 45.2 percent to 53.2 in two-driver households, 79.9 percent to 81.8 percent in three-driver households, and 86.6 percent to 92.1 percent in households with four drivers or more.

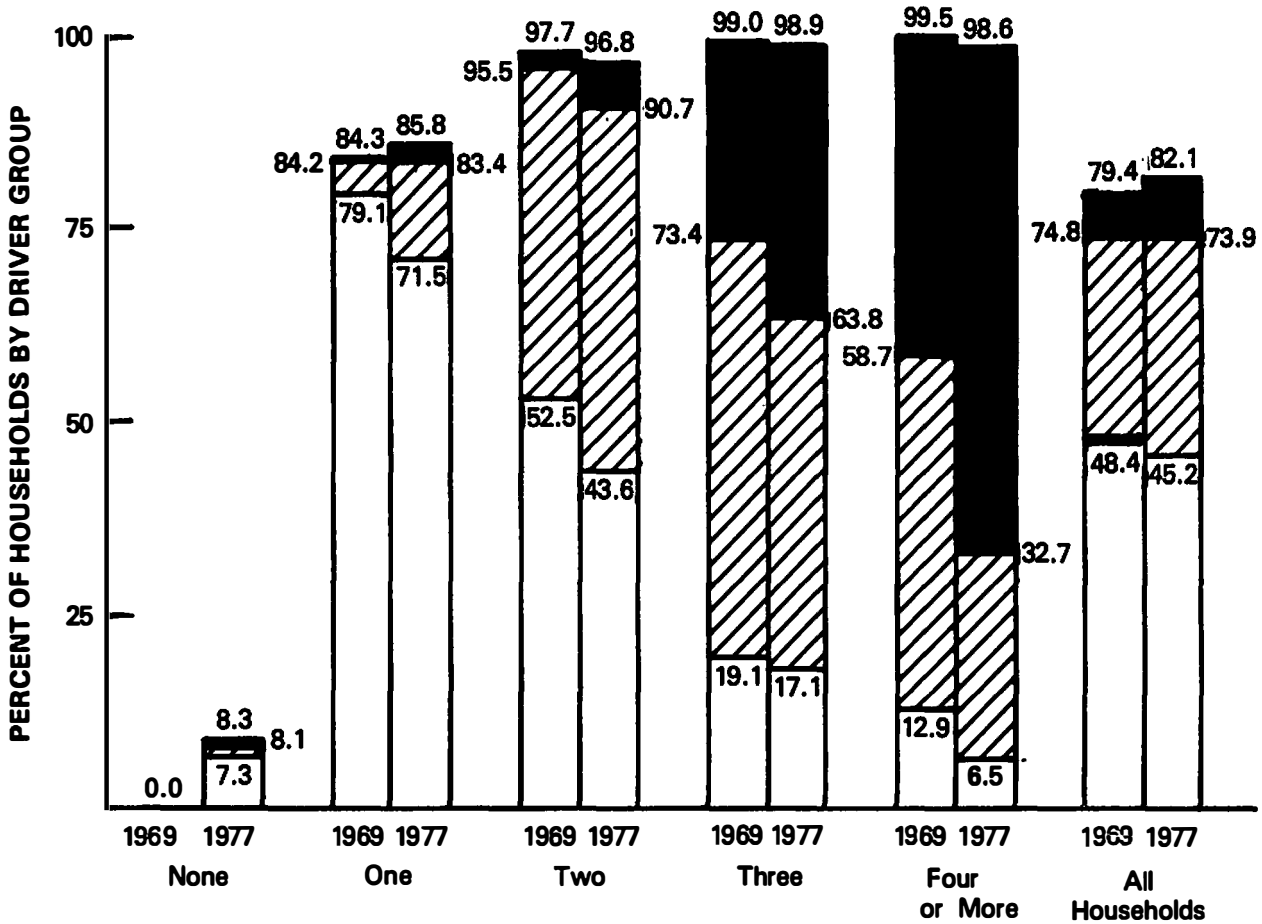
As seen in Table 31, changes have also taken place since 1969 in the distribution of households by driver group. Most notably, the proportion of single-driver households has grown from 17.2 percent in 1969 to 33.6 percent in 1977, and the proportion of zero-driver households from 8.7 percent to 12.7 percent, both presumably mirroring the shift described earlier toward one-adult households. Conversely, the proportion of two, three and four-or-more driver households declined over the period.

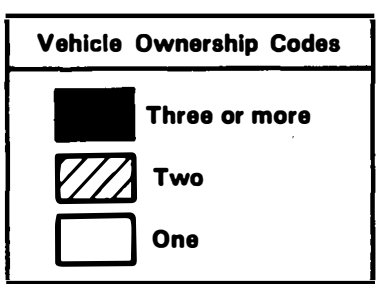
More detailed data on household auto ownership as related to household drivers in 1977 may be found in Appendix A, Table A-4.

E. TRENDS IN AUTO OWNERSHIP BY AGE OF AUTO AND WHETHER PURCHASED NEW OR USED

Households in 1977 displayed a tendency to retain their autos longer than in 1969. These trends, which are illustrated in Figure 14 and Table 32, indicate that larger proportions of older autos were owned by households in 1977 compared to 1969 in all ownership categories.

FIGURE 13
PERCENT OF HOUSEHOLDS OWNING ONE OR MORE AUTOS*
BY NUMBER OF DRIVERS PER HOUSEHOLD IN 1969 AND 1977





* Includes standard auto, station wagon, personal use taxi, and vanbus/minibus

Source: Based on Table 5 from 1969 NPTS Report: *Vehicle Ownership* (p. 21), and 1977 Table A-4

Table 31. Percent of Households by Auto Ownership* and Number of Drivers in 1969 and 1977

Household Auto Ownership		Number of Household Drivers					
		None	One	Two	Three	Four or More	All
		Within Driver Group					
1969	None	100.0	15.7	2.3	1.0	0.5	20.6
1977		91.7	14.2	3.2	1.1	1.4	17.9
1969	One	0.0	79.1	52.5	19.1	12.9	48.4
1977		7.3	71.5	43.6	17.1	6.5	45.2
1969	Two	0.0	5.1	43.0	54.3	45.8	26.4
1977		0.8	11.9	47.1	46.7	26.2	28.7
1969	Three or More	0.0	0.1	2.2	25.6	40.8	4.6
1977		0.2	2.4	6.1	35.1	65.9	8.2
1969	Total†	100.0	100.0	100.0	100.0	100.0	100.0†
1977		100.0	100.0	100.0	100.0	100.0	100.0‡
Household Auto Ownership		**None**	**One**	**Two**	**Three**	**Four or More**	**Total**
		By Ownership Group					
1969	None	68.3	21.1	9.0	1.2	0.4	100.0
1977		65.1	26.6	7.6	0.5	0.2	100.0
1969	One	0.6	30.8	59.4	7.1	2.1	100.0
1977		2.1	53.0	41.4	3.1	0.4	100.0
1969	Two	0.0	2.5	62.1	25.8	9.6	100.0
1977		0.3	13.9	70.0	13.3	2.5	100.0
1969	Three or More	0.0	0.3	12.9	50.0	36.8	100.0
1977		0.3	10.5	27.9	32.8	28.5	100.0
1969	All	8.7	17.2	50.3	16.4	7.4	100.0†
1977		12.7	33.6	42.8	8.2	2.7	100.0‡

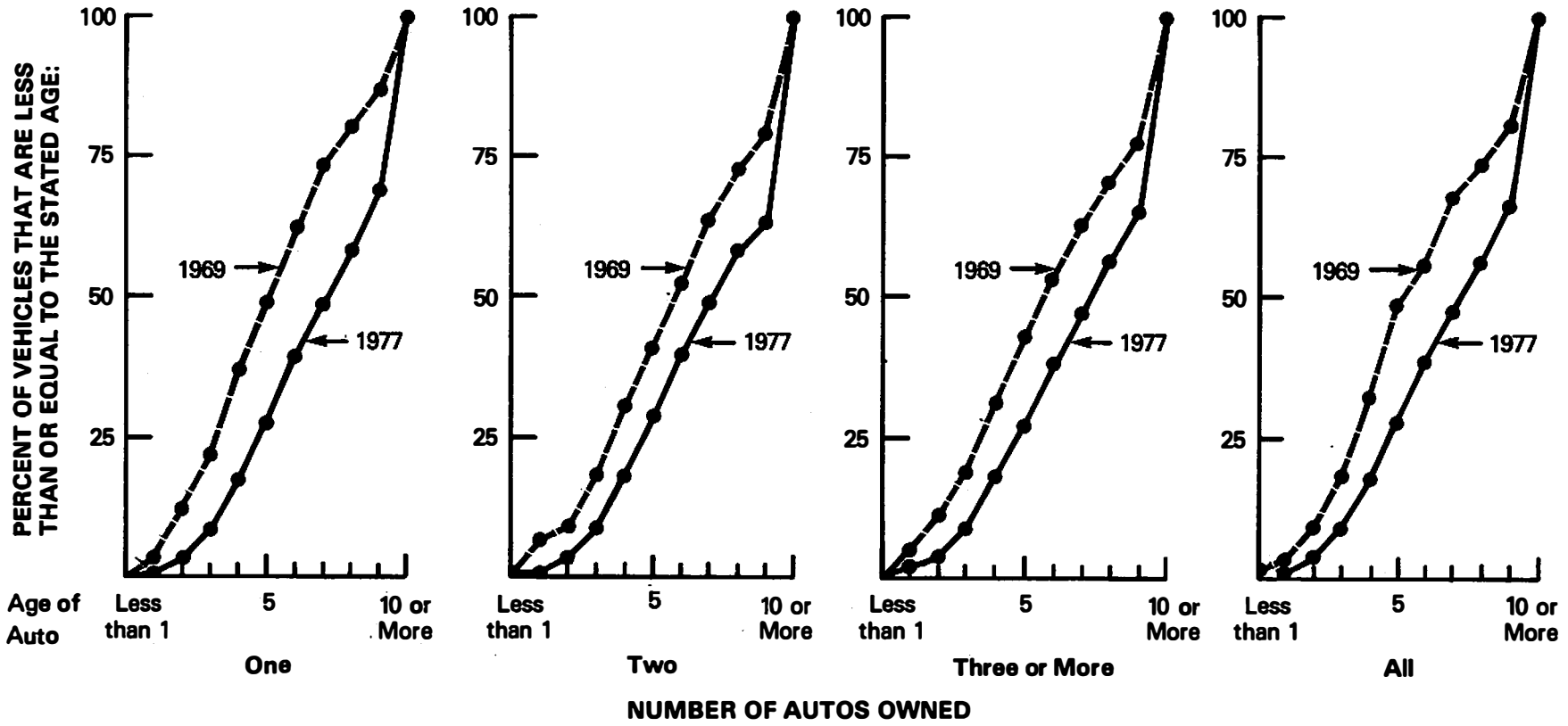
* Includes only auto (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on regular basis

Source: Based on Table 5 in 1969 NPTS Report: *Vehicle Ownership* (p. 21) and 1977 Table A-4 in Appendix

† Total Households = 62.5 million (1969)

‡ Total Households = 75.4 million (1977)

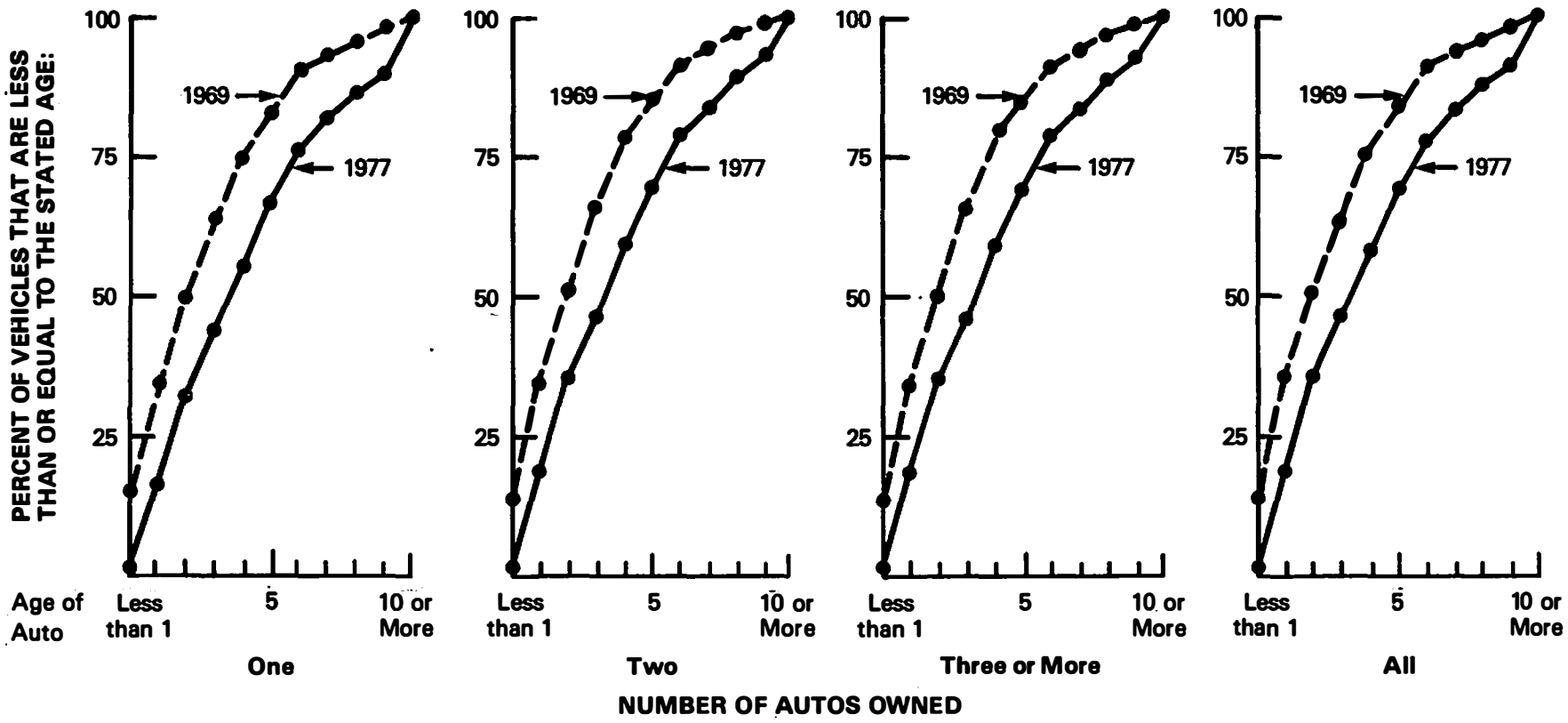
FIGURE 14 (Continued)
PERCENT OF AUTOMOBILES* PURCHASED USED BY AUTO OWNERSHIP AND AGE OF AUTO



* Includes only autos (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on a regular basis

Source: Based on data presented in Table 32.

FIGURE 14
PERCENT OF AUTOMOBILES* PURCHASED NEW BY AUTO OWNERSHIP AND AGE OF AUTO



* Includes only autos (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on a regular basis

Source: Based on data presented in Table 32

Table 32. Percent of Automobiles* Purchased New and Used By Age of Auto and Auto Ownership in 1969 and 1977

Autos Purchased New

Household Auto Ownership		Age of Auto in Years: Less than 1	1	2	3	4	5	6	7	8	9	10 or Older	Total
1969	One	13.8	19.6	15.0	14.2	11.9	7.8	7.2	3.2	2.3	2.0	3.0	100.0
1977		1.3	14.8	16.0	11.8	11.1	11.2	9.5	6.1	4.6	3.2	10.4	100.0
1969	Two	14.2	20.4	15.9	15.3	11.9	7.3	5.8	3.1	2.7	0.7	2.7	100.0
1977		1.9	16.9	16.6	11.2	11.5	11.6	8.2	5.6	5.0	3.8	7.7	100.0
1969	Three or More	18.6	24.6	17.0	10.8	9.2	7.9	2.8	2.8	1.2	0.7	4.4	100.0
1977		2.7	17.4	17.7	10.1	11.3	10.0	8.1	5.3	4.5	3.4	9.5	100.0
1969	All	14.5	20.6	15.6	14.3	11.6	7.5	6.0	3.1	2.4	1.3	3.1	100.0 †
1977		2.0	16.6	16.9	11.2	11.1	11.0	8.5	5.4	4.7	3.4	9.2	100.0 ‡

Autos Purchased Used

Household Auto Ownership		Age of Auto in Years: Less than 1	1	2	3	4	5	6	7	8	9	10 or Older	Total
1969	One	0.4	3.0	5.8	9.8	14.6	12.5	13.5	11.4	6.0	6.8	16.2	100.0
1977		0.0	0.7	3.6	4.6	8.6	10.2	11.6	9.5	9.8	10.5	30.9	100.0
1969	Two	0.6	2.8	6.5	8.2	12.2	11.6	10.4	12.3	7.8	7.3	20.3	100.0
1977		0.0	0.9	3.6	5.4	8.4	10.7	11.0	9.4	9.1	9.4	32.1	100.0
1969	Three or More	0.6	4.5	6.5	7.8	11.3	12.6	9.9	10.4	6.0	6.7	23.7	100.0
1977		0.0	1.0	3.0	5.1	9.0	9.3	10.7	9.3	8.6	9.1	34.9	100.0
1969	All	0.5	3.1	6.2	8.8	13.0	12.1	11.7	11.8	6.8	7.0	19.0	100.0††
1977		0.0	0.9	3.4	5.1	8.3	10.1	10.8	8.8	8.8	9.4	34.4	100.0‡‡

* Includes only auto (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on regular basis

† Total automobiles purchased new 1969 = 32.5 million

‡ Total automobiles purchased new 1977 = 45.6 million

†† Total automobiles purchased used 1969 = 32.9 million

‡‡ Total automobiles purchased used 1977 = 49.5 million

The median age for all autos purchased new increased from 2 years in 1969 to 3.2 years in 1977, while the median age of all autos purchased used increased from about 5.2 years to 7.3 years. The mean age of all auto vehicles owned by a household member in 1977 was 6.4 years, ranging from 4.6 years for autos purchased new to 8.5 years for autos purchased used. This compares with an estimate of 6.2 years for the age of the average passenger auto (manufactured in the United States) in 1977 as reported by the Motor Vehicle Manufacturers Association.

The tendency toward older vehicles prevails at all ownership levels. For autos purchased new, there is a difference of 1.5 years (2.0 vs. 3.5 years) in median age in one-auto households, 1.2 years (2.0 vs. 3.2 years) in two-auto households, and 1.8 years (1.4 vs. 3.2 years) in households with three or more autos. For autos purchased used there is a difference of 2.0 years (5.2 vs. 7.2 years) in one-auto households, 1.5 years (5.7 vs. 7.2 years) in two-auto households, and 1.7 years (5.6 vs. 7.3 years) in households with three autos or more. The mean age of autos in the 1977 survey is 6.4 years for vehicles in households owning one or two autos, 6.8 years for vehicles in households with three autos, and 7.4 years for vehicles in households with four autos or more.

V. SUMMARY

Vehicle ownership rates are strongly tied to household location, economic, and compositional factors. Overall, 84.7 percent of U.S. households owned at least one motorized vehicle in 1977, at an average of 1.59 vehicles per household. If only auto vehicles are considered, 82.1 percent of households own at least one vehicle, at an average of 1.30 per household.

Including nonauto vehicles in the analysis of vehicle ownership is an important contribution of the 1977 NPTS since it shows certain households to be more mobile than would otherwise be observed. Non-SMSA households, in particular, and lower-middle ($5,000 to $15,000) to middle ($15,000 to $25,000) income households show higher rates of vehicle ownership when motor vehicles other than autos are also considered. Considering only autos, households in areas outside SMSA's average 1.26 vehicles per household and 16.7 percent of these households are without vehicles. When all vehicles are considered, average vehicles per household increases to 1.72 and the number of nonvehicle households falls to 12.2 percent. Similarly, households without vehicles in the $10,000 to $25,000 income range falls from 6.8 percent to 4.5 percent if all vehicles are considered and average vehicles per household increases from 1.54 to 1.88.

Examining household determinants in vehicle ownership shows that ownership increases in households where location places more emphasis on private vehicle ownership for mobility. As a result, household vehicle ownership is greater in smaller SMSA's and in SMSA areas outside central cities. Households in SMSA's under 250,000 own an average of 1.65 motor vehicles. This declines to 1.57 for SMSA's from 500,000 to 3 million, and 1.31 for the largest SMSA's (over 3 million). Households located within SMSA's and inside central cities own fewer vehicles (1.31 per household) than SMSA households living outside central cities (1.75 per household).

Household income is, of course, a major determinant in vehicle ownership. Households with incomes over $10,000 per year own 1.67 or more vehicles per household, compared to the average of 1.59 for all households. Rate of ownership grows steadily from 0.73 vehicles per household for incomes under $5,000 to 2.61 for incomes of $50,000 or more.

Vehicle ownership closely compares with the number of drivers in the household, and the number of vehicles owned is only slightly less than the number of household adults. Households with one driver average 1.21 vehicles, while households with two, three and four or more drivers average 1.97, 2.78 and 3.47 vehicles, respectively. In comparison, households with one adult average 0.71 vehicles, while households with two, three and four or more adults average 1.67, 2.24 and 2.81 vehicles, respectively.

Other indexes of household composition offer insights into vehicle ownership. One index examined in this report is household structure, which combines composition and life cycle considerations in distinguishing between households. Using this index, the lowest rates of ownership occur in households where the head is retired or where there is only one adult member. Households with children generally own more vehicles than those without, and the number of vehicles increases with the age of the children. Households where the youngest child is 16 or older have the highest ownership rates.

Vehicle ownership has increased over the period 1969 to 1977 due to important changes in income and demographics. In 1969, 28 percent of all households had incomes of $15,000 or more (in 1977 dollars). By 1977, the proportion of households with incomes of $15,000 or more had grown to 37.2 percent. The other major change during this period was in household formation, in particular an increase in the number of households from 62.5 million in 1969 to 75.4 million in 1977. The bulk of this change occurred through an increase in the proportion of one-adult households, which grew from 20.8 percent in 1969 to 25.7 percent in 1977, a 23 percent change. The overall increase in households in proportion to population, despite the trend toward smaller households, has had an upward impact on vehicle ownership, since more households implies greater numbers of independent vehicle-owning units.

As a result of these and other related changes, the number of privately-owned vehicles has increased significantly from 1969 to 1977. The number of automobiles*

*Standard autos, station wagons, vanbus/minibus vehicles, and personal-use taxis as defined in the 1969 NPTS .

owned by or regularly available to households increased from 72.3 million in 1969 to 98.1 million in 1977, for an increase of 35.7 percent. Even considering the growth in proportion of smaller households during this period, average autos per household increased from 1.20 to 1.30 over the same period, for an increase of 20.8 percent per household. It is expected that the change in total vehicle ownership during the same period has been even greater, considering the widening market for recreational vehicles including pickups, vans, camper vehicles, and motorcycles and mopeds. Lacking comparable data between the 1969 and 1977 surveys, however, a direct comparison cannot be made.

With regard to the characteristics of vehicles owned by households in 1977, the data show that autos (including standard autos, station wagons and taxi vehicles maintained by the household for personal use) account for almost 79.6 percent of all vehicles by type. Light trucks (pickups with and without camper) account for another 12.8 percent of all household vehicles, van-type vehicles (vanbus/minibus and other van) another 2.8 percent, and motorcycles and mopeds 2.9 percent. The remaining 1.9 percent consist of camper coaches, other trucks, and other nonspecified vehicles.

The average age of all household vehicles in 1977 was 6.6 years. Autos, station wagons, and vans are somewhat less than the average age but still more than 6 years. Pickups (7.3 years) and other trucks (11.6 years) tend to be retained in use longer than the average passenger vehicle, while vanbus/minibus vehicles (5.5 years) and camper coach (4.5 years) are generally among the newest vehicles owned. It is expected, however, that the recent popularity of van and camper-type vehicles is responsible for their relatively young age and not an accurate reflection of their probable service life.

Examining the age characteristics of auto-type* vehicles suggests that households are keeping vehicles longer. In 1969, only 58.2 percent of all autos were more than 3 years old, while in 1977 the number had grown to 81 percent of all autos. In

*Standard auto, station wagon, personal-use taxi, and vanbus/minibus as defined in the 1969 NPTS.

general, these older vehicles are heavier and less fuel efficient than those produced during the three most recent model years (1976-1978). Higher prices for new cars, complex antipollution equipment, reduced power, and the need to use more expensive unleaded fuel are probable factors influencing retention of older vehicles.

Of all vehicles owned or available on a regular basis to households in 1977, 93.7 percent were actually purchased by household members. Of the remaining vehicles, 3.6 percent were company-owned, 0.6 percent were procured through lease, and 0.1 percent are rental vehicles, with the remaining 2.0 percent available through other unspecified means. A slight majority (53.4 percent) of those vehicles actually owned by household members have been purchased used rather than new. Vehicles of all types are more likely to be household-owned if the household has only one vehicle available. Of all vehicles in single-vehicle households, 96.5 percent are owned by household members, compared with 92.8 percent in multivehicle households. While vehicles of all types except personal-use taxi are most commonly owned by the household, vans, trucks and station wagons are the vehicle types most often available to the household by some other means. Vehicles most often company-owned are vanbus/minibus, other vans, and other trucks. Autos and station wagons are the most commonly leased or rented vehicles.

In general, the more specialized the vehicle, the more likely it is that the vehicle will be found in a multivehicle rather than a single-vehicle household. Overall, 78.2 percent of all household vehicles are located in multivehicle households. However, only 73.3 percent of all autos are found in multivehicle households, compared to 81.3 percent of all station wagons, 87.6 percent of all vanbus/minibus vehicles, 90.6 percent of all other vans, 90 percent of all pickups, 92.3 percent of all pickups with campers, 98 percent of all other trucks, 96 percent of all camper coaches, 98.5 percent of all motorcycles, and 98.8 percent of all mopeds.

The data also show that vehicle characteristics and methods of ownership are closely tied to characteristics of the household, such as household location, income, number of drivers, household structure, and occupation of the household head.

With regard to vehicle type, auto-type vehicles are found in greatest numbers in households in larger urban areas. Autos (standard autos, station wagons or taxis) comprise 88.1 percent of all vehicles in SMSA's of 3 million or more, compared with 83.5 percent in SMSA's of 500,000 to 1 million, 80.5 percent in SMSA's under 250,000 and 71.9 percent in non-SMSA areas. By contrast, pickups (with and without camper) comprise 19.2 percent of all vehicles in non-SMSA's, compared with 12.7 percent in SMSA's under 250,000, 9.8 percent in SMSA's of 500,000 to 1 million, and 5.2 percent in SMSA's of 3 million or more. Ownership of other types of vehicles tends to be fairly uniform across areas. Studying the effect of household income on vehicle ownership shows that while number of vehicles owned grows with household income, the proportion of vehicles that are standard autos does not change significantly by income level. Station wagons, vanbus/minibus, camper coach, and mopeds are owned in greater percentages with increasing income, while pickups tend be most prevalent among the lower-middle to middle income strata. With regard to household structure, households without children have the highest ownership rates of auto-type vehicles and single-adult households own larger proportions of auto vehicles than multiple-adult households. Households with children own higher relative proportions of high-occupancy vehicle types, such as station wagons and vanbus/minibus. Trends in ownership of other vehicle types, like trucks or recreational vehicles, are not significantly related to household structure.

Method of vehicle ownership also varies with household characteristics. Generally, a higher percentage of vehicles are owned through purchase in households residing outside SMSA's, since company-owned and leased vehicles are more common in urban areas. Of all vehicles in non-SMSA households, 94 percent are owned compared to 93.5 percent in SMSA households. However, a greater percentage of household-owned vehicles are purchased new in large urban areas than in smaller areas. Only 41.1 percent of household-owned vehicles are purchased new in non-SMSA areas, compared with 41.5 percent in SMSA's under 250,000 and 51.4 percent of vehicles in SMSA's over 3 million. The proportion of vehicles that are owned by the household also varies by household income. The percent of vehicles that are owned increases with income through the $10,000 to $15,000 class, and then generally declines as incidence of company-owned and leased vehicles rises. Of vehicles in households with incomes under $5,000, 93.9 percent have been

purchased by household members, compared to 94.7 percent in households with $10,000 to $15,000 incomes, and dropping to 85.5 percent in households of $50,000 or greater. The proportion of vehicles owned by the household that are purchased new grows directly with level of income. While only 33.6 percent of vehicles in households with incomes under $5,000 are purchased new, 41.7 percent are purchased new by households with incomes of $10,000 to $15,000, and 61.2 percent are purchased new in households with incomes of $50,000 or more. Company-owned vehicles account for 11.4 percent of all vehicles in households with $50,000 or greater income, but only 1.3 percent in households with under $5,000 income.

Physical characteristics of vehicles also vary according to characteristics of the household. Vehicles in households residing in large SMSA's are generally the newest, averaging 6.4 years in SMSA's over 3 million, compared to 6.9 years in SMSA's under 250,000, and 6.8 years in non-SMSA areas. Age of autos (standard autos, station wagons and personal-use taxis) follows similar lines: 6.3 years in SMSA's over 3 million to 6.7 years in SMSA's under 250,000 and 6.6 years in non-SMSA areas. Other vehicle characteristics such as weight, MPG, and engine size do not vary significantly by location.

Household income has a considerable impact on vehicle characteristics. Average age of auto vehicles declines from 8.4 years for households with incomes under $5,000 per year, to 6.0 for households in the middle income range ($15,000 to $25,000), to 4.6 years for households with incomes of $50,000 or more. Autos owned by higher income households also tend to be systematically heavier (3,835 pounds curb weight for highest income group vs. 3,469 pounds for lowest), have larger engines (7.15 cylinders vs. 7.06 cylinders), and have poorer fuel economy (16.8 MPG for highest income group vs. 19.7 MPG for lowest income group).

APPENDIXES

Table A-1. Percent of Households by Auto Ownership* and Place of Residence in SMSA's in 1969 and 1977

Household Auto Ownership		Within SMSA Size Groups					
		Under 250,000	250,000 to 499,999	500,000 to 999,999	1 million to 3 million	Over 3 million	All
1969	None	14.7	20.9	19.7	18.0	29.2	21.1
1977		15.7	15.0	16.6	16.1	26.9	18.4
1969	One	47.7	42.7	53.6	49.7	43.5	47.4
1977		45.6	46.8	44.0	44.0	39.3	43.7
1969	Two	32.7	30.0	23.5	27.2	24.2	27.0
1977		28.6	31.0	30.9	31.0	25.5	29.2
1969	Three or more	4.9	6.4	3.2	5.1	3.1	4.5
1977		10.1	7.2	8.5	8.9	8.3	8.7
1969	Total †	100.0	100.0	100.0	100.0	100.0	100.0
1977		100.0	100.0	100.0	100.0	100.0	100.0
Average Autos Per Household							
1969		1.30	1.30	1.30	1.30	1.00	1.20
1977		1.36	1.35	1.33	1.34	1.17	1.30

		By SMSA Size Group					
		Under 250,000	250,000 to 499,999	500,000 to 999,999	1 million to 3 million	Over 3 million	Total
1969	None	10.3	13.4	15.2	23.9	37.2	100.0
1977		10.4	11.6	13.9	27.5	36.6	100.0
1969	One	14.9	12.1	18.4	29.9	24.7	100.0
1977		12.9	16.6	15.8	32.0	22.7	100.0
1969	Two	17.9	15.0	14.1	28.9	24.1	100.0
1977		12.0	16.3	16.4	33.5	21.8	100.0
1969	Three or more	16.2	19.2	11.7	34.2	18.7	100.0
1977		14.3	14.1	15.3	30.9	25.4	100.0
1969	All†	14.8	13.5	16.3	28.6	26.8	100.0
1977		12.3	15.4	15.6	31.6	25.1	100.0

Source: Table 2 (P.15) and 14 (P.34) from 1969 NPTS Report: *Vehicle Ownership*

* Includes only auto (standard auto, station wagon, personel use taxi) and vanbus/minibus vehicles owned or available on regular basis

† Includes 50.8 million households in 1977 and 41.5 million households in 1969

Table A-2. Percent of Households by Auto Ownership* and Annual Household Income for 1969 and 1977**

Household Auto Ownership		By Income Group						
		Under $5,000	$5,000 to 9,999	$10,000 to 11,999	$12,000 to 14,999	$15,000 to 24,999	$25,000 and and over	All
1969	None	63.1	25.5	9.1	4.9	2.8	1.2	20.6
1977	None	50.2	21.0	11.3	7.9	4.6	2.8	17.9
1969	One	33.6	61.2	57.9	59.2	44.0	27.4	48.4
1977	One	41.1	58.7	57.5	51.4	39.2	24.4	45.2
1969	Two	3.3	12.1	29.4	30.8	46.0	55.2	26.4
1977	Two	7.0	17.2	25.9	34.2	44.2	49.2	28.7
1969	Three or more	0.0	1.2	3.6	5.1	7.2	16.2	4.6
1977	Three or more	1.7	3.1	5.3	6.5	12.0	23.6	8.2
1969	Total†	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
1977	Total†	100.0	100.0	100.0	100.0	100.0	100.0	100.0†
		By Ownership Group						
1969	None	56.1	28.6	7.5	4.7	2.7	0.4	100.0
1977	None	55.1	25.5	5.8	5.3	6.4	1.9	100.0
1969	One	12.7	29.8	14.8	20.3	17.7	4.7	100.0
1977	One	17.9	28.4	11.7	13.8	21.5	6.7	100.0
1969	Two	2.5	11.4	12.5	20.0	35.4	18.2	100.0
1977	Two	4.8	13.1	8.3	14.4	38.1	21.3	100.0
1969	Three or more	0.0	7.1	10.7	16.2	33.5	32.5	100.0
1977	Three or more	4.1	8.2	5.9	9.7	38.1	38.0	100.0
1969	All†	19.2	23.7	12.4	16.7	19.6	8.4	100.0
1977	All†	19.7	21.8	9.2	12.1	24.7	12.5	100.0

* Includes only auto (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on regular basis

** 1969 income adjusted to 1977 dollars through use of consumer price index

† Includes 62.5 million households in 1969 and 75.4 million households in 1977

Table A-3. Percent of Households by Auto Ownership* and Number of Household Adults** (1977)

Household Auto Ownership	Number of Adults Per Household				
	One	Two	Three	Four or More	All
	Within Households				
One	54.0	48.7	28.3	19.5	45.2
Two	3.5	37.1	42.1	31.2	28.7
Three	0.5	3.3	18.3	26.1	6.3
Four or More	0.1	0.5	3.1	16.4	1.9
Subtotal	58.1	89.6	91.8	93.2	82.1
None	41.9	10.4	8.2	6.8	17.9
Total	100.0	100.0	100.0	100.0	100.0†
Average Number of Autos Per Household	0.63	1.35	1.80	2.26	1.30
	By Ownership Group				
One	30.7	57.6	8.5	3.2	100.0
Two	3.2	69.0	19.8	8.0	100.0
Three	1.9	27.9	39.4	30.8	100.0
Four or More	1.6	12.5	22.2	63.7	100.0
None	60.0	31.0	6.2	2.8	100.0
All Households	25.7	63.4	13.5	7.4	100.0†

† Total Households = 75,412,000

* Includes only auto (standard auto, station wagon, personal use taxi) and vanbus/minibus vehicles owned or available on regular basis

** Defined as persons 16 years of age and older

Table A-4. Percent of Households by Auto Ownership* and Number of Household Drivers (1977)

Auto Ownership Per Household	Number of Licensed Drivers Per Household					
	None	One	Two	Three	Four or More	All
	Within Driver Group					
One	7.3	71.5	43.6	17.1	6.5	45.2
Two	0.8	11.9	47.1	46.7	26.2	28.7
Three or More	0.2	2.4	6.1	35.1	65.9	8.2
Subtotal	8.3	85.8	96.8	98.9	98.6	82.1
None	91.7	14.2	3.2	1.1	1.4	17.9
Total	100.0	100.0	100.0	100.0	100.0	100.0†
Average Number of Autos Per Household	0.1	1.0	1.6	2.2	2.9	1.3
	By Ownership Group					
One	2.1	53.0	41.4	3.1	0.4	100.0
Two	0.3	13.9	70.0	13.3	2.5	100.0
Three	0.3	9.6	37.0	37.1	16.0	100.0
Four or More	0.3	11.5	18.8	28.4	41.0	100.0
None	65.1	26.6	7.6	0.5	0.2	100.0

† Total Households = 75,412,000

* Includes only auto (standard auto, station wagon, personal use taxi) and venbus/minibus vehicles owned or available on regular basis.

APPENDIX B

SURVEY PROCEDURES AND DATA PROCESSING

Background

The 1977 NPTS was conducted by the Bureau of the Census under the joint sponsorship of the Federal Highway Administration, and the National Highway Traffic Safety Administration of the Department of Transportation (DOT), as part of the expanded scope of the National Travel Program. The National Travel Program is part of the Census of Transportation, which is conducted every five years by the Bureau of the Census and includes the National Travel Survey (NTS). In 1977, the National Travel Program also included the 1977 NPTS and provided profiles of the volume and characteristics of travel by the civilian population.

Sample Design

The 1977 NPTS was based on a national probability sample of 24,466 households selected from each of the 50 States and the District of Columbia and representing the total civilian noninstitutional population of the United States. Of the 24,466 household, 3,433 units were found to be vacant, demolished, converted to nonresidential use, or otherwise ineligible for the survey. Some 3,084 households were not interviewed because the occupants were not at home after repeated calls, refused to paticipate in the survey, or were unavailable for some other reason.

All of the sample units consisted of households that had previously been interviewed for the Current Population Survey (CPS). The CPS is a stratified multistage cluster sample. In the first stage, the United States was divided into 1,030 primary sampling units (PSU's) consisting of counties, groups of counties, or independent cities, which were grouped into 376 strata. Among these strata, 156 consisted of a single PSU, designated as self-representing (SR) areas, and generally contained the larger metropolitan areas. The remaining 220, contained one or more PSU's that are relatively homogeneous according to socioeconomic characteristics. From each stratum, a single PSU was selected for the sample with a probability proportionate to its 1970 census population; these PSU's are referred to as non-self-representing (NSR). The CPS portion of the NPTS was selected from these 376 PSU's (156 SR and 220 NSR).

Methodology

As indicated previously, the 1977 NPTS was conducted as part of the expanded scope of the National Travel Program which also included the National Travel Survey (NTS). The NTS/NPTS included a common sample of 13,365 households interviewed from April-November 1977 and January 1978; these households were referred to as the basic sample, and were interviewed four times for NTS data and once for NPTS data. An additional 4,584 addresses, referred to as the supplemental sample, were divided into three equal parts and were interviewed in December 1977, February 1978, and March 1978. This arrangement spread the total NPTS data collection over a 12-month period from April 1977-March 1978, with approximately 1500 households to be interviewed each month.

The households within each monthly sample were divided into 14 equal parts, with each part assigned to one of the first 14 days of the interview month. The assigned day was referred to as the designated travel day. In addition, each household was interviewed for trips of 75 miles and longer for the 14 days preceding the travel day; this was referred to as the 14-day travel period. Thus each household was interviewed for trips and travel during a 15-day period.

Data Processing

The major steps performed by the Bureau of the Census for the 1977 NPTS included clerical editing and coding of the NTS-2 Questionnaire, (Sections I-VI); the NTS-2A (Section VII) was edited and coded by the FHWA DOT personnel; full transcription of the data to magnetic tapes; computer edit of the data to ensure completeness and consistency; calculation of the weighting factors for each household; and computation of variance and calculation of statistical reliability of the data. The the data was tabulated upon receipt of the edited, weighted data tapes from the Bureau of the Census.

Subject Areas Planned for 1977 NPTS Reports

The following is a list of subject areas for which 1977 NPTS reports are presently planned. The sequence does not necessarily indicate the order in which the reports will be prepared and published. It is offered as an indication of current plans as well as

to give transportation researchers and planners a general indication of the variety and scope which the 1977 NPTS data encompasses. For those reports that have been published, the correct title, report number and publication date are shown.

CHARACTERISTICS OF 1977 LICENSED DRIVERS AND THEIR TRAVEL
(Report 1, October 1980)
HOUSEHOLD VEHICLE OWNERSHIP
(Report 2, December 1980)
PURPOSES OF VEHICLE TRIPS AND TRAVEL
(Report 3, December 1980)
HOME-TO-WORK TRIPS AND TRAVEL
(Report 4, December 1980)
Vehicle occupancy
Vehicle utilization
Travel and the family life cycle
Multi-occupant vehicle travel - public and private
Rural vs. urban travel
Mapping as a travel data collection technique
Survey description and tables of variance
Discretionary travel
Household travel rates
Person-trip characteristics

Special Tabulations

There are some applications that require the use of data items on the Census file, such as those related to place of residence of individual respondents, that cannot be included on the public use tape without possible disclosure of the individual respondents. If disclosure can be avoided, the Bureau of the Census will undertake special tabulations in accordance with its policy that "Special tabulation or transcriptions of data in the files of the Bureau of the Census will be undertaken on a cost basis, insofar as Bureau facilities are available. Those requesting special tabulations should understand that the data are based on surveys paid for by public funds and, therefore, are public property. The purpose for which such tabulations are obtained must not be contrary to the public interest, or be used to give unfair commercial or other advantage to any person or group."

Requests for special tabulations should be adressed to: Chief, Demographic Surveys Division, Bureau of the Census, Washington, D.C. 20233.

Survey Questionnaire

Copies of the NPTS Survey Questionnaire are available upon written request from the Office of Highway Planning (HHP-44), Federal Highway Administration, Washington, D.C. 20590

APPENDIX C

NPTS PUBLIC USE TAPE REQUEST

Single copies of the tapes are available through the Federal Highway Administration (FHWA).

For governmental agencies and educational institutions, there no charge for tape copying. If no tapes are furnished with the request, there is a $25 charge for each tape provided by FHWA.

For private individuals and all nongovernment or noneducation organizations, there is a $36 charge per tape copied. In addition, if no tapes are forewarded with the request, there is an added charge of $25 for each tape provided by FHWA.

All tapes provided to FHWA should be 9-track.

Appropriate user documentation will be provided with each request.

All orders should be documented on the attached form and should clearly indicate:

1. Which (or all) of the four (4) quarters of data that are desired.
2. Name and/or title of the individual or organization making the request.
3. Number of tapes, if any, included with the request (or being shipped separately).
4. Amount of payment enclosed if applicable.

All checks or money orders should be made payable to Federal Highway Administration. Request and payment should be forwarded to:

Federal Highway Administration
Highway Statistics Division
HHP-44 (NPTS)
400 Seventh Street, SW
Washington, D.C. 20590

NPTS Public Use Tape Request

1. Data desired

   Tape 1 - First Quarter ( )

   Tape 2 - Second Quarter ( )

   Tape 3 - Third Quarter ( )

   Tape 4 - Fourth Quarter ( )

   Tapes 1-4 - All Quarters ( )

2. Number of tapes submitted

   None (tape payment included) ( ); 1 tape ( ); 2 tapes ( ); 3 tapes ( ); 4 tapes ( )

3. Method of tape submittal

   With order ( )

   Under separate cover ( )

4. Type of tape labeling desire

   Standard IBM labels ( )

   No labels ( )

5. Recording density (9-track)

   800 BPI ( )

   1600 BPI ( )

6. Type of organization, Name and Address

   Educational ( ) Government ( )

   Private Organization ( ) Private Individual ( )

   Other (specify) ( )

   Name _____

   Title _____

   Organization _____

   Address _____

   City, State, Zip _____

7. Total fee enclosed

Tape copy on user furnished tape(s),_____quarters @ $36 per quarter $_____

Tape copy on FHWA furnished tape(s),_____quarters @ $61 per quarter $_____

8. Payment enclosed as

Money order ( )

Check ( )

APPENDIX D

GLOSSARY OF TERMS USED IN NPTS

This glossary is provided to assist the user in the interpretation of the data.

Airport: A commercial facility that services regularly scheduled airlines.

Carpool: A regularly scheduled traveling arrangement whereby two or more persons ride together in the same vehicle, sharing the driving and/or the cost of the trip, or simply riding together regularly with one or more persons doing the driving. If two or more household members regularly ride to work in the same vehicle, it is also considered a carpool.

Central City: A city of 50,000 inhabitants or more in the 1970 Census or twin cities i.e., cities with contiguous boundaries and constituting, for general social and economic purposes, a single community with a combined population of at least 50,000, and with the smaller of the twin cities having a population of at least 15,000.

Destination: For travel period trips, the destination is the farthest point of travel from the point of origin of a one-way trip of 75 miles or more.

In travel day trips, the destination is the point at which there is a break in travel.

Driver: A person who operates a motorized vehicle. If more than one person drives on a single trip, the person who drives the most miles is classified as the principal driver. If one or more household members share the driving, the percent of driving done by each household member is recorded separately. If nonhousehold members share the driving, the total percent of driving done by all nonhousehold members is recorded.

Education Level: The number of years of regular schooling completed in graded public, private, or parochial schools, or in colleges, universities, or professional schools, whether day school or night school. Regular schooling is

that which advances a person toward an elementary or high school diploma, or a college, university or professional school degree.

Employed: A person is considered employed if there is a definite arrangement for regular full-time or part-time work for pay every week or every month. A formal, definite arrangement with one or more employers to work a specified number of hours a week, or days a month, but on an irregular schedule during the work month is also considered employment. A person who is on call to work whenever there is a need for his (her) services, is not considered employed.

Family Income: The money income of all persons in a household, including those temporarily absent. Includes wages and salary (before deductions), commissions, tips, cash bonuses; net income from a person's own (unincorporated) business, professional practice, or farm (gross receipts minus business expenses); pensions, dividends, interest, unemployment or workmen's compensation, social security, veterans' payments, rent received from owned property (minus the operating costs), public assistance payments, regular gifts of money from friends or relatives not living in the household, alimony, child support, and other kinds of periodic money income other than earnings. Excludes income in kind, such as room and board, insurance payments, lump-sum inheritances, occasional gifts of money from persons not living in the same household, money received from selling one's house, car, or other personal property, withdrawal of savings from banks, and tax refunds.

Federal-aid rural area: Any area outside of federal-aid urban areas.

Federal-aid urban area: An urban place of 5,000 or more population as determined by the Bureau of the Census.

Freeway, tollway, or expressway: A divided arterial highway for through traffic with full or partial control of access and grade separations at major intersections.

Head of household: The one person who is regarded as the head by the members of the household. In most cases the husband is the head, if living in the household. In some cases, the head may be a parent of the chief wage earner or the only adult member of the household. An Armed Forces member is considered as the head only if he lives at home and is a household member. Only one head is designated for each household.

Household: A group of persons whose usual place of residence is a specific housing unit; these persons may or may not be related to each other. The total of all U.S. households represents the total civilian noninstitutionalized population.

Household trip: One or more household members traveling together.

Household vehicle: A motorized vehicle that is owned, leased, rented or company owned and left at home to be regularly used by household members during the reference period. Includes vehicles used solely for business purposes if kept at home, e.g., taxicabs, police cars, etc., which may be owned by, or assigned to, household members for their regular use. Includes vehicles brought home by a car sales person or auto mechanic, only if the vehicle was available for use by him (her) during the entire reference period. Includes all vehicles that were owned or available for use by members of the household during the reference period even though a vehicle may have been sold before the interview. Excludes vehicles that were not working and not expected to be working within 60 days, and vehicles that were purchased or received after the designated travel day.

Licensed driver: Any person who holds a valid driver's license from any State.

Means of transportation: A personal mode used for going from one place (origin) to another (destination). Includes private and public motorized modes, as well as walking. For all travel day trips, each change of mode constitutes a separate trip. The following personal transportation modes are included:

- Automobile: A privately owned and/or operated licensed motorized vehicle including cars, jeeps, dune buggies and stationwagons. Also includes leased and rented cars if they are privately operated and not picking up passengers in return for fare.

- Vanbus/Minibus: Privately owned and/or operated vans and buses designed to carry from 5-13 passengers.

- Pickup truck/other van: A small open-body motorized vehicle, privately owned and/or operated, with four to six tires, built on a chassis comparable to that of a passenger car. Accommodates fewer than five passengers. Includes travel trucks (service trucks) when they are not being used for commercial purposes.

- Other truck (personal use): The private use, either as a passenger or driver, of all other types of trucks, i.e., dump trucks, trailer trucks, etc., when they are not being used for commercial purposes.

- Motorcycle: Includes large, medium and small motorcycles. Does not include minibikes, etc., which can not be licensed for highway use.

- Self-contained recreational vehicle: Includes recreational vehicles that are operated as a self-contained unit without being hitched to another vehicle: for example, a motor home.

- Taxi (personal use): The use of a passenger vehicle either by a driver or a passenger, which does not involve the duties of a professional driver for the payment of a fare by a passenger.

- Bus: Includes intercity buses, etc.; mass transit systems and shuttle buses that are available to the general public. Also includes senior citizen buses or similar bus services that are available to the public. Does not include shuttle buses operated by a government agency or private industry for the convenience of employees, contracted or chartered buses or school buses. These latter types are included in "other."

- Train: Includes commuter trains and passenger trains other than elevated trains and subways.

- Streetcar: Includes trolleys, streetcars, and cable cars.

- Elevated rail or subway: Includes elevated train and subway trains.

- Airplane: Includes commercial airplanes and smaller planes that are available for use by the general public in exchange for a fare. Private planes and helicopters are included under "other."

- Taxi (commercial use): The use of a taxicab by a driver for hire or by a passenger for fare. Also includes airport limousines. Does not include rental cars if they are privately operated and not picking up passengers in return for fare.

- Truck (commercial use): Includes the commercial use, either as a driver or a passenger, of pickups, dump trucks and trailer trucks being operated for business-related purposes.

- Bicycles: Includes bicycles of all speeds and sizes and minibikes.

- Walk: Includes jogging, walking etc., provided the origin and destination are not the same.

- Schoolbus: Includes county school buses, private school buses, and buses chartered from private companies for the express purpose of carrying students to or from school and/or school-related activities. Does not include school buses chartered or reserved for other trips, such as church outings; these are included under "other."

- Motorized bicycle/(often called a Moped): Includes bicycles equipped with both pedals and a small engine, typically a horsepower or less.

- Other: Includes any types of transportation not included above.

Motorized vehicle: Includes all vehicles that are licensed for highway driving. Specifically excluded are snowmobiles, minibikes, etc.

Origin: Starting point of a trip.

Owned vehicle: Includes all vehicles that one or more household members have purchased for private use regardless if paid for in full, or a gift or legacy to a household member for private use.

Passenger: For a specific trip, any occupant of a motorized vehicle other than the driver.

Person (household member): All people, whether present or temporarily absent, whose usual place of residence is the sample unit, or people staying in the sample unit who have no other usual place of residence elsewhere.

Person miles: A measure of person travel. When one person travels one mile, one person mile of travel results. Where two or more persons travel together in the same vehicle, each person makes the same number of person miles as the vehicle miles. Therefore, four persons traveling five miles in the same vehicle, make 4 times 5 vehicle miles or twenty person miles.

Person nights: The number of nights spent by each person away from home on a travel period trip. For example, two persons on a trip spending 5 nights away from home would result in ten person nights.

Person trip: A unit of person travel. When two or more persons travel together in the same vehicle, each person is counted as making one person trip.

Rural area: Any area outside of an urban place.

Standard Metropolitan Statistical Area (SMSA): Except in the New England States, a standard metropolitan statistical area is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In

addition, contiguous counties are included in an SMSA if, according to certain criteria, they are socially and economically integrated with the central city. In the New England States, SMSA's consist of towns and cities instead of counties.

Station wagon: A passenger vehicle, having an enclosed body of paneled design with two or more seats, where the rear seats can be removed or folded down to create larger luggage or freight compartments.

Stop: For travel period trips, a break in travel other than for gasoline, rest and food. For travel day trips, each stop is treated as a separate trip.

Train station: A depot where regularly scheduled trains may be boarded for travel to cities at least 30 miles away.

Travel day: A 24-hour period from 4:00 a.m. to 3:59 a.m. designated by the Bureau of the Census as the reference period for studying trips and travel of a particular household.

Travel period: The 14 days immediately preceding the travel day of a household.

Traveler: A person reporting a travel day and/or travel period trip(s).

Traveling houshold: A household reporting at least one travel day and/or travel period trip.

Trip(travel day): A travel day trip is defined as any one-way travel from one address (place) to another by private motor vehicle, public transportation, bicycle, or walking. Jogging and walking for exercise are excluded. When travel is to more than one destination, a separate trip exists each time one or both of the following criteria is satisfied:

a. The traveltime between two destinations exceeds 5 minutes.

b. The purpose for travel to one destination is different from the purpose for travel to another.

The one exception is travel within a shopping center or mall. It is to be considered travel to one destination, regardless of the number of stores visited.

Trip(travel period): A travel period trip is one-way to a destination which is 75 miles or more from place of origin.

Trip duration: For travel period trips, the number of nights spent away from home on a single trip, including time (nights) spent enroute and at the destination. For travel day trips, usually measured in minutes.

Trip purpose: The main reason that motivated the trip. For purposes of this survey, there are 21 trip reasons. If there are more reasons than one, and the reasons do not involve different destinations, then only the main reason is chosen. If there are two or more reasons, and they each involve different destinations, then each reason is classified as a separate trip. The 21 trip reasons are defined as follows:

- To place of work: Includes travel to a place where one reports for work. It does not include any other work-related travel.

- Work-related business: Trips related to business activities except to the place of work; for example, a plumber drives to a wholesale dealer to purchase supplies for his business.

- Convention: Trips made to attend business, professional, special interest, and other types of conventions.

- Civic/Education/Religious: Trips to political rallies, legislative hearings, voting places, etc.; to school, college, or university for class(es), PTA meetings, seminars, etc.; to church services or to participate in other religious activities. Social activities that take place at a church or school are not classified as religious or educational.

- Eat meal: Trips taken to eat a meal in a public place. Trips taken to a friend's house for dinner are classified "visit friends or relatives."

- Doctor or dentist: Trips made for medical, dental or psychiatric treatment or other related professional services.

- Shopping: Includes "window shopping" and purchases of commodities such as groceries, furniture, textiles, etc., for use or consumption elsewhere.

- Family or personal business: Trips taken to attend organized functions of the family or friends, such as weddings, graduations, reunions, etc. Includes purchase of services such as cleaning garments, beauty parlor treatments, servicing of an auto, etc.

- Visit friends or relatives: Trips made to visit friends or relatives but not prompted by organized family affairs or an emergency.

- Pleasure driving: Includes driving trips made with no other purpose listed here but to "go for a drive" with no destination in mind: for example, a Sunday drive in the country.

- Sightseeing: Trips taken to sightsee or tour with a particular place planned to visit. This distinguishes "sightseeing" from "pleasure driving."

- Entertainment: Trips taken to go to a movie, the theatre, opera, concert, discotheque, cabaret, spectator sports, such as a ball game, races, track meet, or an amusement park.

- Recreation (participant): Trips taken to participate in sporting or outdoor activities, such as fishing, hunting, golf, swimming, picnicking, skiing, skating, bowling, basketball, etc.

- Vacation: Trips reported by the respondent as "vacation."

- Change of vehicle: Trips made specifically to change from one vehicle to another within the same "means of transportation" category. (For example, transferring from one bus to another, one plane to another, or from one passenger car to another.)

— Pick up or leave off passenger: Trips that are made to serve a passenger. For example, a trip by Mrs. Columbo to pick up her mother and drive her to the store on travel day would be reported as two trips: the trip to her mother's home for the purpose of picking up a passenger and the trip to the store for the purpose of shopping. If Mr. Hersholt drives from Washington to Chicago during the 14-day travel period and stops in Baltimore to pick up his son, the purpose of his first stop on his trip to Chicago will be reported in Part B of Section VI as "picking up a passenger."

— Return home: The trip made to the residence of the respondent at the time of the trip. In the case of a college student who lives on campus and is interviewed at school, trips to the dormitory or other living quarters on campus are considered "return home."

— Lodging: Trips made for the purpose of taking overnight accommodations. This category is also used in lieu of "return home" when return trips are to this lodging.

— Social: Trips taken to enjoy some form of social activity involving friends or acquaintances, such as a party, playing cards, dancing, etc.

— Other: Any purpose for a trip that does not fit into one of the above categories.

Type Z noninterview: A person in an interviewed household for which trip information is incomplete but certain demographic information is available.

Urban place: Defined by the Bureau of the Census as follows:

a. A place of 2,500 inhabitants or more incorporated as a city, borough, village, or town, (except towns in New England, New York, and Wisconsin);

b. The densely settled fringe, whether incorporated or not, of urbanized areas;

c. Towns in New England and townships in New Jersey and Pennsylvania that contain no incorporated municipalities as subdivisions and have either 25,000 inhabitants or more, or a population of 2,500 to 25,000 and a density of 1,500 persons or more per square mile;

d. Counties in States other than the New England States, New Jersey, and Pennsylvania that have no incorporated municipalities within their boundaries and have a density of 1,500 persons or more per square mile; or

e. Unincorporated places of 2,500 inhabitants or more.

Urbanized area: Defined by the Bureau of the Census as:

1. Any area made up of:

a. A central city of 50,000 inhabitants or more in 1960, or in a special census conducted by the Census Bureau since 1960, or in the 1970 census; or

b. Twin cities, i.e. cities with contiguous boundaries and consistuting for general social, and economic purposes, a single community with a combined population of at least 50,000 and with the smaller of the twin cities having a population of at least 15,000.

2. Surrounding closely settled territory, including the following (but excluding the rural portions of extended cities):

a. Incorporated places of 2,500 inhabitants or more.

b. Incorporated places with fewer than 2,500 inhabitants provided that each has a closely settled area of 100 housing units or more.

c. Small parcels of land, normally less than one square mile in area, having a population density of 1,000 inhabitants or more per square mile. The areas of large nonresidential tracts devoted to such urban land uses as railroad yards, airports, factories, parks, golf courses, and cemeteries are excluded in computing the population density.

d. Other similar small areas in unincorporated territory with lower population density provided that they serve

- to eliminate enclaves, or

- to close indentations in the urbanized areas of one mile or less across the open end, or

- to link outlying enumeration districts of qualifying density that are not more than 1½ miles from the main body of the urbanized area.

Vehicle mile: A unit to measure vehicle travel made by a household vehicle: automobile, vanbus/minibus, pickup truck/other van, other truck (personal use), motorcycle, self-contained recreational vehicle, and taxi (personal use).

Vehicle occupancy: The number of persons, including driver and passenger(s) in a vehicle; also includes persons who did not complete a whole trip.

Vehicle trip: For purposes of this study, a vehicle trip is a trip made in a private vehicle regardless of the number of persons in the vehicle.

Vehicle type: For purposes of the study, one of the 12 vehicle types used for coding purposes in the household motorized vehicle record of the NTS-2 Questionnaire.

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